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ILLUSTRATIONS.

The "Château d'Eau" for the Paris Exhibition.—M. Paulin, Architect ..... *Double-Page Tone Block.*
The Castle of Haarzuylens, Holland.—As restored by Dr. Cuypers, Architect ..... *Double-Page Photo-Litho.*
House, Burley-in-Wharfedale.—Mr. Ernest Newton, Architect ..... *Single-Page Photo-Litho.*
Congregational Church, Harlesden.—Messrs. Spalding & Spalding, Architects ..... *Single-Page Photo-Litho.*
A Hall Interior.—Mr. G. O. Scorer, A.R.I.B.A., Architect; Design for Chimney-Piece.—By Mr. G. M. Ellwood; Fountain and Clock for St. Clement's, Oxford.—Mr. E. P. Warren, Architect; Design for Font.—By Mr. Ralph Knott ..... *Double-Page Ink-Photo.*

Blocks in Text.

House in the New Forest.—Mr. J. Ransome, A.R.I.B.A., Architect ..Page 370
Elevation of Andrews & Challenger's Patent Scaffold ..... „ 371
Illustrations to Student's Column ..... Page 377
The Castle of Haarzuylens, Holland—Plan of Ground Floor as restored Page 374
Castle of Haarzuylens—Two Angles of the Modern Gatehouse..... „ 375

CONTENTS.

The Engineering Control of the Nile 363
Notes 365
Magazines and Reviews 367
The Architectural Association of Ireland 368
House in the New Forest 370
The Architectural Association Discussion Section 371
A New Scaffold 371
Hampton Sewage Works 372
Competitions 372
St. James the Less, Clerkenwell 372
Fire Tests 373
Architectural Societies 373
The London County Council 373
Applications under the London Building Act, 1894 376
Illustrations:—
The "Château d'Eau": Paris Exhibition 374
The Castle of Haarzuylens, Holland 374
House, Burley-in-Wharfedale 375
Congregational Church, Harlesden 375
A Hall Interior 375
Design for a Chimney-piece 375
Fountain and Clock Turret, St. Clement's, Oxford 376
Design for a Font 376
Correspondence:—
Bell Hanging in Towers 376
Red Ants in Houses 376
The Student's Column. Roads: Their Construction and Maintenance.—17. Drainage 376
Books Received 376
General Building News 378
Foreign 379
Miscellaneous 379
Capital and Labour 380
Legal:—
Workmen's Compensation Act 380
Action against the Army and Navy Stores for Alleged Infringement of Ancient Lights 380
Ancient Light Dispute in the Whitechapel-road 380
Meetings 380
Prices Current of Materials 380
Recent Patents 381
Some Recent Sales of Property 381

The Engineering Control of the Nile.

TO speak of the Nile is to include Egypt, for all that is worth having within its boundaries has proceeded from the river and lies within its valley. And yet not all, for there still remain many priceless monuments of a people whose past extends back to times when the world was young, and whose early history is obscured by the sands of time. So far as the veil has been lifted, we find the Egypt of forty or more centuries ago resembled in many respects the Egypt of to-day. As for the Nile, steadily pursuing its course through the vicissitudes endured by an unfortunate people until they lost the qualities that make a nation, it remains practically unchanged, and with little diminished power still brings down from the hills the elements of life to a needy and thirsty land. Egypt may furnish intellectual food to the world at large, but for itself more tangible sustenance is necessary. Thus it is that whilst the educated classes of other nations may think of the land as the realisation of an ideal, those best acquainted with its daily wants know it as a place essentially for the engineer. Sufficient contrast is presented by modern innovations in better-known parts of the country, but in regions where the population still tries to live the life of two thousand years ago, nineteenth century engineering appears as a materialised anachronism. It is true that hydraulic engineering was practised by the early Egyptians during intervals of tomb-building, and later by alien rulers who were discerning enough to recognise its value as a factor governing tax-producing power. Later still, however, arrived times when civilisation was almost forgotten, during which the people went back to primitive habits, and the admirable works of other days were allowed to fall into ruin.

Subsequent to the advent of misgovernment and corruption, ably personified by the Turk, river engineering was revived; chiefly, however, for the benefit of the rich and powerful. The poor shifted for themselves; and the taxes they paid, under persuasion, were squandered in extravagance of the most unproductive kind. Next followed internal troubles, the loss of the Soudan, and financial ruin, concerning the last of which the only surprise is that it was so long averted. Finally, the British occupation came, establishing order and justice where there had been chaos, making waste places fertile, rebuilding a diminished population, and replacing insolvency by prosperity. These transformations have already surprised some nations and mortally wounded the vanity of another, but our work is nevertheless still in its infancy. It is interesting to notice, especially at the present time, some recent remarks on this subject by a French writer. These comments are the more valuable because we do not expect unduly flattering compliments from such a source. The writer in question says:—"It would be the height of bad taste to deny the value of the work accomplished by the Anglo-Egyptians. Nothing could be stupider than to shut our eyes to the intelligence and perseverance with which the programme of 1882 has been carried out, especially as regards finance, judicial reforms, and the work of irrigation. If we French had taken the country in hand under the same conditions we should most probably have muddled everything or beat a hasty retreat."

Much that remains to be done is educational in one sense or another, but a large proportion comes within the scope of practical engineering. Of this part the greatest and most beneficent labour is undoubtedly that of controlling the Nile, so that it may minister more completely to the wants of the rehabilitated nation. Our present concern is to consider the means which have been, and are to be, adopted for the attainment of this end. As due appreciation of the subject may thereby be aided, we will briefly review the physical geography of the river from its source to the sea.

Victoria Nyanza, having an area estimated at 27,000 square miles, receives the copious rainfall of equatorial highlands, and acts as an immense head reservoir for the Nile, which is first differentiable as a river as it issues at the Ripon Falls, some 4,000 ft. above the sea level. Albert Nyanza, into which the river afterwards flows, acts as a secondary reservoir with an area of about 2,000 square miles. Leaving this lake by a rocky channel, the river proceeds in a northerly direction, its course sometimes smooth, but more generally rapid and turbulent, until the confines of the hilly country are reached near Lado. Beyond this point a series of swampy wastes is passed, flooded for miles as rainy seasons recur. The Bahr-el-Ghazal presently contributes its sluggish and evil waters to the river, whose condition is not materially improved until after the influx of the Sobat. Henceforward and down to Khartoum, a well-defined course is followed in a plain where sandstone formation predominates. At Khartoum, a junction is effected with the Blue Nile, a tributary of purer water rising in the Abyssinian mountains, and controlled by the natural reservoir of Lake Tsana, with an area of nearly 3,000 square miles, and situated about 5,600 ft. above sea-level. Two hundred miles below Khartoum, the Atbara joins the Nile, bringing down, in flood time, large quantities of the dark-coloured mud, forming the chief virtue of the waters for purposes of irrigation. Beyond this point, the Nile flows through the Nubian desert and along the Nile valley to the sea, receiving no further tributaries, and losing much by evaporation. To sum up, in a few words, the physical aspects of the Nile, it may be compared to an aqueduct bringing water to one country from collecting grounds and uncontrolled reservoirs in other countries. As an aqueduct, the Nile is by no means perfect, for, like other rivers, it simply obeys certain well-defined natural laws, and does not go out of its way to help mankind. If the latter choose to occupy its banks and to build cities thereon, all consequent risk, and the trouble of adapting natural conditions to artificial

requirements, must be taken. In London, the Thames is our drink, although we do not quite succeed in drinking the whole of it at present. In Egypt it is the land primarily that drinks and feeds upon the river, and these functions are not yet completely exercised. Something has been done for their furtherance during generations long passed by, more in recent years, and much more is now to be done. Modern engineering is at last free to resuscitate earlier undertakings, and to add new works of unprecedented magnitude which will provide means for the almost complete control and assimilation of the river, and for the draining away of fluid whose work is done. When this aim shall be accomplished, Egypt will constitute a gigantic system of inverse filtration, holding back and using all that is good, and allowing all that is useless or harmful to flow into the sea.

To be perfectly fair, it must be admitted that preliminary steps in this direction were inaugurated early in the present century. Mehemet Ali, an intelligent but not entirely admirable ruler, recognised the advantages which would follow the cutting of a canal connecting the Nile with Alexandria, and thus restoring the communication existing before the old canal fell into disrepair. He therefore issued orders, but no tools, for the performance of the work. About 250,000 people, whose patriotism was encouraged and rewarded by the lash, took part in the operations, which were duly executed, together with some 25,000 of the unhappy workers. It was Mehemet Ali, also, who authorised the commencement of the Barrage, north of Cairo, and suggested the appropriateness of the Pyramids as building material. Mougel Bey, the eminent French engineer to whom the work was entrusted, did not accept the last-named ingenious idea, notwithstanding his connexion with a profession recently said by a zealous archæologist to be devoid of all sentiment. Begun in 1837, on a site of mud and sand, with insufficient appliances and unsuitable labour, the barrage was not supposed to be complete until the year 1861, and even then no one was found rash enough to close the sluices against the High Nile. When the experiment was ultimately made on one part of the structure, pressure proved to be in excess of frictional stability, and there were such unmistakable signs of collapse that the sluices were at once re-opened and no further attempts of a similar nature were made until after its repair, or more correctly, its completion, by Sir Colin Moncrieff about the year 1890. In river engineering two main forms of dam are employed, the solid dam, or *barrage fixe*, and the open dam, or *barrage mobile*. The first of these, being a continuous structure, is apt to interfere with the normal state of things by promoting the accumulation of silt, even when pierced by sluices. Such an effect is avoided by a *barrage mobile*, in consequence of the scour of water through the sluice-gates. It is always necessary in the latter type of construction that there should be a continuous foundation connecting pier with pier. The "roots" of the dam must be carried well into the banks at either side, and curtain walls have to be provided both up and down stream, for protection of the foundations. The Cairo Barrage belongs to the latter class, and is at present the most important completed work in connexion with the river. It spans the Rosetta and Damietta branches, and is over a mile in length. There are 120 double sluices, each gate measuring about 20 ft. by 12 ft., of the type patented by Mr. Stoney, and similar to those used on Loch Erne and elsewhere. During flood-time 30 ft. of water may be held up by the dam, but as it is desirable that pressure should be kept down as much as possible, weirs have been made on the northern side, for the purpose of auxiliary storage. Notwithstanding the unfavourable site, there is no reason for doubting that the original engineer would have successfully surmounted all difficulties had he been left alone by his impatient employer. As it is, the foundations still rest on mud and sand, though measures have been taken to prevent the impounded waters from forcing their way underneath. This danger is not entirely at an end, and the defences of the masonry continue to receive constant attention.

In spite of these troubles, the Barrage is an accomplished fact. By its aid efficient regulation of the Nile in Lower Egypt becomes possible. When the river is in flood, water in excess of the quantity required for irrigation passes down the Rosetta and Damietta channels, and in the dry season supplies are cut off from these branches, whilst every available gallon is turned on to the land. Something more has been done, under British auspices, than the completion of the Barrage. Irrigation canals and drains, formerly inter-connecting and nullifying each others' work, have received attention, so that drainage from the land proceeds directly to the sea. The network of channels now forms part of a carefully thought out system, whose ramifications are being extended year by year.

The present season has unfortunately proved to be the worst on record with respect to the quantity of water in the river. Without doubt this will mean serious loss; and were it not for the excellent work performed in recent years by the Public Works Department there would be widespread desolation. In the course of three or four years additional works will provide a reserve store of water sufficient to give the whole of Egypt ample supplies of water, even in times of exceptional drought. With regard to these works, now well in hand, it should be mentioned that they could hardly have been undertaken until control had been established in Lower Egypt by the Barrage. The reason for delay was removed about 1890, as previously stated, and then serious consideration was given by the Government as to the inauguration of further improvements, chiefly for the benefit of Middle and Upper Egypt. In these provinces a system of irrigation differing from that employed in the Delta is generally practised. The land is annually flooded, and cultivation proceeds only in the winter months. Water is conveyed from the river by canals which are full when the river is high, and nearly dry when it is low. If the method were changed, two, three, or four crops could be raised, as in the Delta. So drastic an alteration was not to be lightly undertaken, and as a preliminary step Mr. William Willcocks, C.M.G., M.Inst.C.E., at that time connected with the Public Works Department, was instructed to make enquiry and to report to Government. After four years practical study of the question, Mr. Willcocks presented a Report advocating perennial irrigation and additional barrage, together with improvements in existing canal works, and the construction of others. A masterly and absolutely impartial document, the Report appears to possess the fault of unnecessary modesty with regard to the selection of the sites of the new reservoirs recommended. Expressing no decided opinion on this point, Mr. Willcocks suggested the appointment of an international technical Commission for the guidance of the Government in their final selection. International conferences, as we have lately seen, are not invariably successful, and in respect of Egyptian matters they are never desirable. Further, our opinion is that an engineer who has exhaustively studied a question is the most competent judge of its technical aspects. However, the Commission was duly constituted, and finally confirmed the opinions of Mr. Willcocks. The next step was to decide exactly where barrage should be established. On this point, the most careful investigation was made as to the various alternative sites indicated. One at Wadi Rayyan was rejected for several reasons, the most important being that the reservoir, if constructed, could only serve Lower Egypt, and might prove inadequate even for this province, owing to unfavourable natural conditions. Four other sites proposed were in Upper Egypt, two above and two below the island of Philæ, celebrated for its beautiful ruined temples, whose existence was seriously threatened by one of the reservoir schemes. No one of educated tastes could witness with equanimity any interference with these relics, whether avoidable or unavoidable, and we believe the technical advisers of the Egyptian Government have endeavoured to avoid such interference. This will be more clearly shown if we briefly refer to the respective qualifications of the four sites in question.

The first of these, at Gebel-es-Silsileh, is about forty-six miles below Assouan, and the river runs from one place to the other closely bordered by steep hills. A reservoir formed in this neighbourhood would be extremely narrow; it would flood the town of Assouan and submerge some interesting relics of the past. Moreover, the rock is of sandstone, interstratified with clay, very susceptible to the action of water, and therefore not to be recommended as a secure bed for the imposition of a dam. Taking next the site indicated at Kalabsha, thirty miles above Philæ, we find a good rocky bottom, but that the river is nearly 500 ft. across with a depth of 98 ft. Consequently, the construction of a dam would have been difficult and most costly. The two remaining sites are at Philæ and at Assouan respectively. The former would protect the Island from all interference, whilst the latter must inevitably cause submersion, wholly or in part. Here the Commissioners had to choose between duty and pleasure, if the two were irreconcilable. The rock in the site suggested above the island is good, but not so good as that at Assouan, the channels are deeper, besides being otherwise less suitable than those in the other place, and the reservoir works would have cost over 200,000*l.* more than those at Assouan. We have previously expressed the opinion that only on the clearest evidence that no other course was reasonably open, should the latter site be adopted. That this evidence has been forth-

coming there appears to be no doubt whatever. Sir Benjamin Baker, the British member of the Commission, has said, "Nowhere else in the whole of the Nile Valley did they find such advantages of site; sound rock, numerous islands, a wide section, so that the action of the water issuing from the sluices would be minimised, and shallow water in which to work." The majority of the Commission were of opinion that it was practically impossible to adopt any other than the Assouan site, for it alone afforded the conditions necessary for the building of an absolutely safe and reasonably cheap dam. For these reasons the Commission reported favourably as to the Assouan site, proposing some modifications in the plans drawn by Mr. Willcocks, to which we will refer a little later, and making the preposterous suggestion, to which we have before referred, that the ruins at Philæ should be raised bodily some 40 ft., so as to be above the reservoir level. In addition, a dam was recommended at Assiut, about half-way between Assouan and Cairo, and also other irrigation works in the same vicinity and in the Delta.

Having before them the invaluable Report prepared by Mr. Willcocks, and the favourable opinion of the Technical Commission, there was no other conclusion to be drawn by the Egyptian Government but that the establishment of the works in question constituted a pressing necessity. It is however, one thing to decide upon the desirability of expenditure and another to find the necessary funds. The two qualifications, as many of us know by experience, are not always concurrent. In Egyptian finance, hampered as it is by foreign control, there is generally difficulty in applying accumulated funds even for the benefit of the country. So it happened with respect to the great works we have mentioned, the inauguration of which was delayed four long years, chiefly owing to the representatives of the French nation, which is said to be both great and logical. Egypt and its people have suffered, and still suffer, from the effects of these attributed virtues, or possibly from their absence; but the difficulty in this case, as in others, has been overcome by British aid. The contract for the reservoirs and other works has been undertaken by Messrs. Aird & Co., for the sum of 5,000,000*l.*, and will probably be completed within the next three years. The terms arranged are suited to the financial position we have indicated. Payment is to be spread over the period of thirty years, at the rate of 166,666*l.* per annum; but as the direct annual return to the state is estimated at 850,000*l.*, no financial problem is presented, and an immense benefit will almost immediately result. Beyond this, the people themselves will ultimately profit by an increase of annual produce, estimated at no less than 7,975,000*l.* The original designs, altered in some respects by the International Commissioners, formed the basis for the new works, and it was arranged by the Government that Mr. Willcocks should have the valuable assistance of Sir Benjamin Baker as a colleague in the capacity of consulting engineer.

(To be concluded in our next.)

TECHNICAL SCHOOL, DUNFERMLINE.—A technical school was opened at Dunfermline on the 10th inst. The building, of three floors, was designed by Mr. David Barclay, architect, Glasgow, and has been erected at a cost of from 10,000*l.* to 12,000*l.*

NOTES.

The Disaster at Karnac.

PROFESSOR SAYCE, in a letter in the *Times* of the 17th, confirms the news of the fall of a number of the columns at the Temple of Karnac. He says the catastrophe occurred at 9 a.m. on October 9, and is supposed to have been due to a slight shock of earthquake. "Eleven columns in all have fallen in the fourth and fifth rows north of the axis of the temple and between this and the wall of Seti I. They are thus in a line with the leaning column which was restored last winter by M. Legrain. They all fell in a straight line from east to west, the result being that the westernmost is still partly propped up against the pylon of the temple." Professor Sayce adds that the architraves are utterly broken and destroyed, though the columns may be set up again. This disaster to the remains of what may be considered the most wonderful architectural monument of the ancient world is indeed a thing to grieve over. Unless we are to lose more of the remains of Egyptian architecture, it is evidently necessary that steps should be taken to secure adequately all those which are in such a condition as to be easily overturned.

Co-operation of Capital and Labour.

THE account given by Mr. Livesey, the Chairman of the South Metropolitan Gas Company, at the recent Co-operative Congress at Newcastle, of the success of his co-operative scheme is interesting and important. Under it the workmen benefit from the prosperity of the company, as well as the shareholders. Mr. Livesey stated that co-operation in other undertakings has frequently not proved equally successful. The truth is, that even when co-operation is sound in principle it requires great care in working out. The term co-operation is often used very loosely. Workmen—the rise and fall of whose wages depend on the success of an undertaking—are co-operating in the enterprise. They give their labour, they receive certain sums from the returns in the shape of wages. If the business is a failure they lose their wages and have to seek a livelihood elsewhere. It is desirable, therefore, not to set too much store by the talk about co-operation. What is meant by it is that workmen should have a closer interest in the daily success of an undertaking than they usually have now. But it is equally clear that to carry out this idea in practice is by no means easy, and that unless care is taken a workman who becomes closely associated with the fortunes of an undertaking may be in a worse financial position than if he is a mere wage receiver. But that where it is possible to interest a workman in the success of an enterprise and yet to keep his wages, as Mr. Livesey seems to have done, up to a certain standard, greater contentment will prevail can hardly be doubted.

Electric Traction in London.

THE decision at this week's meeting of the London County Council to employ Professor Kennedy, F.R.S., as engineer in charge to adapt their existing tramways to electric traction and to work out in detail the new schemes which have been proposed has given general satisfaction. Although Professor Kennedy's work has been mainly the designing of electric lighting stations, yet he has had considerable experience in electric traction. We may mention the Waterloo and City Railway as an excellent example of his work in this direction. The report he made to the County Council of his recent visit to America showed that he fully appreciated all the recent developments that have been taking place in American practice, and how the improved methods of locomotion had solved the housing problem in many of their cities. It is satisfactory to know that the County Council intend applying for powers to work many of their tramways under the Light Railways Act of 1896, instead of under the Tramways Act. This will secure them against the "dog in the manger" policy of some Local Authorities, whose veto under the Tramways Act would probably have wrecked many of the schemes. We understand that Professor Kennedy has already begun the preparation of plans and estimates for the work. He estimates the cost of the light railways (including mains, power-house, rolling stock, &c.), at 15,000*l.* per mile of single track for conduit or underground work, and at 12,000*l.* per mile for overhead work. Two of the tramways, namely one in Archway-road, Islington, and one in Kingston-lane, near Wandsworth, will be worked on the overhead system. The Highways Committee also proposed to equip the tramways from Deptford to Woolwich, and from Lee Green to Eltham, with trolley wires; but Professor Kennedy and Mr. Baker rightly pointed out that the Government would almost certainly object, as such a method of working the tramways would render useless many of the valuable electrical instruments at present at Greenwich Observatory, which are at present making continuous records of the changes in the earth's magnetism.

Electricity in Switzerland.

THE visit of the members of the Institution of Electrical Engineers to Switzerland this year was a great success as a holiday outing, and the inspection of Swiss engineering practice was both interesting and instructive. What seems to have struck English engineers most, accustomed as they are to Government and municipal restrictions, was the great use made of bare overhead high-tension wires in country districts. These wires are fixed to insulators on wooden poles, just like telegraph wires, yet many of them are at a pressure of over 10,000 volts. Breaking insulators by throwing stones annually costs the Post Office in this country some thousands of pounds, so the fewness of the accidents they have abroad is difficult to explain; but it is probably partly due to the very severe punishments enforced against any one found trying to damage the wire. The splendid equipment of the Polytechnic at Zurich, and the admirable arrangements they have for training electricians, were favourably commented on. Scientific observations and laboratory tests are a necessity to manufacturing electricians, so that the close connexion between the Polytechnic and the manufacturers was of the greatest use to both. The practically universal use of three-phase currents surprised many of the English electricians, who thought that polyphase working was still in its infancy. Three-phase motors requiring practically no attention (as they have no commutator) were in general use, and the unlimited water-power available made the use of electric-power the rule even in the smallest

works. In electric traction perhaps the most instructive railway visited, from the engineering point of view, was the Burgdorf and Thun Electric Railway. It is of ordinary gauge, and the heavy locomotives and trains are operated by three-phase currents on the overhead trolley system.

Standardised Tests of Materials.

Before the commencement of the present century, little was known with regard to the properties of materials under stress. Probably the advent of railways a couple of generations ago has been chiefly responsible for the impetus given to investigations of the kind. Since then, applications of iron and steel in ship-building, in architectural work and elsewhere, have necessitated additional data in order that assured security might be combined with economy and uniformity. Only after the accumulation of numerous tests did it become possible for any approximately accurate appreciation of strength to exist. With the multiplication of records, however, the fact was ascertained that strength varied with the dimensions of the sample examined and with differential incidence of the load. Further, the point arose that, owing to the adoption of differing methods for the definition and measurement of resistance to stress, comparison of results became a matter of difficulty. During the last few years, marked improvement has been made, both in the selection of specimens and in the appliances used for the purpose of investigation, but the standardisation of tests for comparative purposes still remains an idea incompletely realised. One cause inimical to uniformity is that variations of interpretation are apt to arise when tests of identically similar specimens are made in two different laboratories. Thus it is evident that not only modes of procedure, but testing machines also, should be standardised. No one who has studied the question can fail to recognise the value of work done by individual experimentalists in the past, or to hope that future researches of the kind may be increased in practical value by the establishment of standard methods. An organisation, formed in 1895 under the style of the International Association for Testing Materials, has for its objects the promotion of the reform which we have indicated. Its membership is about 2,000 at the present time, and there are branches in nearly every European country, as well as in America. Amongst the materials subjected to consideration are iron, steel, stone, slate, cements, mortars, tile pipes, paints, lubricants and timber. The reports of the annual congresses have hitherto been printed only in French and German, but a proposal is now made that the transactions should also be published in English. This alteration, and a possibility that the International Congress of 1900 may take place in London, should tend to largely increase the British membership of the Association, whose aims are in every way worthy of support.

The Sewage Works at Hampton.

The opening of the new sewage works at Hampton last week afforded an opportunity for some remarks of congratulation on behalf of the Thames Conservancy on the completion of these works. Complaints are sometimes made, not without truth, that the Thames Conservancy do not manage the Thames as well as they might do; but there can be no doubt on the other hand that they are doing very good work in the improvement of the sanitary state of all the districts near the Thames or its tributaries. In the continual pressure which is put by the Thames Conservancy on numberless local bodies with the view of preventing the pollution of the Thames, there is the best safeguard for the sanitary improvement of a very large area. A District Council, whether it likes it or not, has to take the sanitary state of its district into consideration when the Conservancy informs it that unless the pollution of some affluent is stopped, legal proceedings will be taken. Then by degrees local pride is aroused when it is found that an adjoining district has undertaken sanitary works. We have often said that the existing sanitary laws are sufficient, if only they will be put in operation, and the success of the Thames Conservancy shows what can be done if some body or person will keep matters alive.

The Sewage Problem in Manchester.

Progress in regard to the disposal of Manchester sewage is slow. On the one hand we find the Manchester and Irwell Joint Committee bringing action after action against the Corporation because the sewage effluent is foul, and the directors of the Ship Canal justly complaining that their canal is to all intents and purposes the main sewer of the city, and the Local Government Board insisting on certain conditions of treatment; and on the other hand we have the Manchester Corporation waiting, like Mr. Micawber, for something to turn up. The Local Government Board has just declined to sanction the required loan for filters unless certain conditions as to land treatment of the filtrates, &c., shall be observed. These conditions appear to the Manchester Rivers Committee to be too onerous, and some of the members suggest that they should proceed under the 235th section of the Public Health Act, and so obtain the necessary funds without recourse to the Local Government Board. Others prefer to wait until the final report of the three experts, who were some time ago commissioned by the Corporation to consider the Manchester sewage problem, has been received. The Fabian policy will, doubtless, be adopted; but, after all, is it a policy worthy of a great and progressive city like Manchester?

The Coal Exchange, London.

The members of the City of London Coal Exchange will celebrate this month the jubilee of the opening on October 29, 1849, of their present building. In 1807 the Corporation bought the "Coal Exchange" for 25,600*l.* from some private individuals, and a new exchange was built for the coal trade with frontages of Portland stone to Lower Thames-street and St. Mary-at-Hill from the plans and designs of J. B. Bunning, City Architect. The semi-circular portico, at the corner, is surmounted by a tower, 106 ft. high, containing the main staircase; the rotunda, 60 ft. in diameter, and lighted by a cupola, has three tiers of galleries; its floor was constructed of a great variety of inlaid woods representing a mariner's compass within a Greek fretted border, the pieces of black oak being brought from the bed of the Tyne, and a block from a mulberry tree, said to have been planted at Deptford by Peter the Great, being used for the dagger (or sword) blade in the City coat-arms. Frederick Sang executed in polychrome the emblematical decorations of the vestibule, the panels on the floors of the rotunda, and elsewhere. The total cost of the extended site, building, and approaches amounted to 91,168*l.* In a basement on the east side were preserved the remains of a Roman hypocaust, discovered in making the foundations.

The Ashmolean Museum, Oxford.

In terms of the will of Dr. Fortnum, who died on March 6, both the income and the treasures of the Ashmolean Museum are largely increased. Dr. Fortnum devised all his real estate, including Hill House, at Stanmore, subject to the life interest of his wife (who died on April 9), with a sum of 10,000*l.*, which he bequeathed to Oxford University in trust to apply one-half of the annual income for the general purposes of the Museum, and the other half of the income to increase the stipends of the Curators of the Ashmolean Museum and of the collection he had already given to that Museum. He also bequeathed his books to the University in trust, to form part of the art and antiquarian library attached to the museum, and to the other objects of his collection already given or lent on loan he has added his collection of works of art, antiquities, old furniture, bronzes, pottery, glass, gems, pictures, and so on, together with a sum of £500 for the provision of glazed cases. The residue of his estate (valued at 41,247*l.*) he leaves to the British Museum for the erection of a room or rooms, to be known as the "Fortnum Galleries," with one for a more adequate display of the late Mr. Franks's collection. The Ashmolean Museum had its origin in the gift by Elias Ashmole of the collection gathered by the Tradescants at Lambeth, to which Ashmole added his own MSS. and gold coins on the condition that the University should provide a fit and proper place for their custody. The Museum, built by Thomas Wood and designed by Wren, was begun in 1679, and opened by the Duke of York in May, 1683. Its contents, since enriched with the Arundel marbles and other contributions, were re-arranged by J. S. Duncan, curator in the interval 1824-5, yet it is only of late years that the reproach has been removed from the state of neglect and decay into which they had been suffered to fall. Some ascribe the design to Thomas Wood. In 1863 the building was renovated by C. Buckeridge, who re-arranged it for a museum of antiquities with an examination-room on the third floor.

Iona Cathedral.

Professor Baldwin Brown, in a letter to the *Times*, protests against the proposed restoration of Iona Cathedral for purposes of worship; and in this case we must support the protest. In the case of Dunblane Cathedral, where a great church was really needed for the district, we considered the objection to reopening it for use was an absurd piece of false sentiment. But the case of Iona, as Professor Brown points out, is very different. The resident population of the island is very small, and the use of the building for service is not required. It would be better to leave it alone; it is not wanted as a church, and half its value as an example of ancient architecture will be gone if it is roofed in and to some extent modernised.

The Goupil Gallery.

THE Goupil Gallery, which may be regarded as being for the present the special home of modern Dutch Art, or of the work of painters allied to that school, has on view a collection of thirty pictures, ten of which are works of the late James Maris, the presence of which is considered the point of the exhibition. Among the landscapes, however, the two finest are Lhermitte's "Les Laveuses" and W. Maris's "Milking Time"; the former a scene in which richly toned trees are massed as a background above a bright stretch of still water; the latter a perfect little composition of trees, meadow and cattle, with a tender gleam of evening light in the sky, the whole treated in the broadest manner. As a composition there is more unity in this than in Lhermitte's work, which is rather ragged in this respect, though very fine in colour. Centrally between these two hangs the most noteworthy of the works of J. Maris that are exhibited, "The Peacock Feather," a little masterpiece of colour and style, showing a small white-frocked and bare-legged child holding out a peacock feather, one slight touch of blue ribbon in her hair being the only other point of bright colour in the picture. The James Maris landscapes are we think somewhat overrated, they are too dull and leaden in hue; "A Sunny Sky" shows a fine mass of clouds, and "The Two Windmills" is fine both in sky and in composition, but the water weakly treated, or rather not treated at all. Among other works are three small ones by Mr. Peppercorn, "Morning," "Sunset on the River," and "Moonlight," all admirable in their way; a fine little square landscape by Harpignies; a large tricky one by Van Couver; a large one by Mesdag in which the parallel lines of the ripples in the foreground are rather irritating; a very pretty girl's head by Mr. Clausen; a picture by Blommers which would be quite admirable if it were not such a palpable imitation of Israels, and two or three by Weissenbruch which look as if they were painted with dirt rather than colour, though the gleam of the white surf in "In the Dunes" is well given. The interesting thing about the collections in this gallery is that they generally illustrate the intellectual and not the merely imitative side of landscape-painting; only it is possible to have too little of the imitative element.

MAGAZINES AND REVIEWS.

The *Gazette des Beaux-Arts* contains an interesting and valuable article by M. Pierre de Nolhac on "Les Bosquets de Versailles," the object of which is to trace out the history of the original designs of the principal "bosquets" or ornamental arrangements of trees, fountains, and buildings in one design, which occur at various points in the gardens of Versailles. The author states that these have undergone much greater alterations than is generally supposed, and that both Louis XIV. and XV. did not scruple to destroy a whole design of this kind and have it laid out anew when they had got tired of the first effect. The authorities for the article are mainly a series of engravings by Cotelle (made originally as decorations for a room in the Trianon), and by J.-B. Martin. The present article deals with the site which appears to have passed through three several stages under three different names—"Fontaine de la Renommée," "Fontaine des Bains d'Apollon," and "Bosquet des Dômes." It has recently been restored, but according to M. Nolhac the restoration does not correctly represent any one of its former stages. The article is to be continued in a future number of the *Gazette*. The same number includes Notes on Bernardino Luini, by M. Pierre Gauthiez; on Vandyck, by M. H. Hymans; and on the English exhibitions of 1899, by M. Henri Frantz, the latter a rather grudging article. Though we cannot differ from the writer in his low estimate of the general interest of the last Academy exhibition, it is hardly fair or true to say "Je ne sais pas de Société d'artistes aussi fermée que la Royal Academy, aussi désireuse d'éloigner d'elle toute forme d'art nouvelle et tout élément de dehors." A considerable number of young artists of more or less new and original aims and methods receive full recognition now from the Academy. M. Frantz further says that we never meet there any foreign painter except Lefebvre and Carolus-Duran. He surely forgets Bouguereau, who nearly always has a prominent position at the Academy; but perhaps M. Frantz will say that only makes matters worse! And (to turn the tables) how many English paintings are to be seen at the Paris Salon?

The *Architectural Review* (Boston) in the issue No. 9 of its Vol. VI., devotes two illustrations to English architecture, viz.: Messrs. Bodley & Garner's church at Pendlebury and Mr. Bodley's church of St. Mary's, Clumber. A house at Overbrook Farms, Pennsylvania, designed by Mr. L. V. Boyd, is an interesting specimen of a modern American quasi-Classic villa, with a certain style of its own. The number also includes a fine measured drawing of the Loggia dei Lanzi, Mr. H. L. Duhring. An article on "Modern Romanesque Architecture" gives a number of small illustrations of modern work of this type in America, with some illustrations of genuine Romanesque as representing the *origines*; the comparison is interesting. Some of the American architects have been very successful in architecture founded on this type.

The *Art Journal* includes an article on "Kew Bridge" written and illustrated by Mr. E. C. Clifford, who does justice to the picturesque character of the old bridge without being blind to the practical defects which have rendered its rebuilding inevitable. The series of "The Decorations of the London Clubs" treats in this number of those of the National Liberal Club, which are to our thinking somewhat wanting in repose, but not perhaps on that account out of keeping with the objects of the Club. An article by Mr. Benn on "Some Rare Old Pewter" in a private collection is an indication of the attention which is now being deservedly given to this type of work. It is noticeable that two articles in the same number deal with the treatment in art of two classes of creatures not commonly associated with the higher walks of art: "The Movements of Fish," by Mr. E. F. T. Bennett, and "The Domestic Fowl in Art," by "H. B. B." with illustrations by Miss C. L. Allport. In *Fifty Years of Art* we have an article on Sir L. Alma-Tadema and one on Sir E. J. Poynter (the latter very well illustrated); these, however, are not reprints, which we understood was the special object of this publication, but new articles—at least, to all appearance. Among the contents is a reprint of Martini's well-known engraving of the Royal Academy exhibition room at Somerset House in 1787, with George IV. and Sir Joshua Reynolds in the foreground.

The *Studio* (September 15) contains an article on Mr. De Morgan's tile work, with examples of many designs carried out in this material. Also one on the gifted American lady artist, Miss Cecilia Beaux, whose beautiful and refined portraits of ladies and children, also a fine portrait of another class, of the Rev. Dr. Grier, show her as a portrait painter of very unusual quality. She received her principal artistic education (like all "good Americans") in Paris. The portrait called "The Dreamer," to which a full-page plate is devoted, is a lovely work.

The *Artist* includes a short article on that interesting old house Ightham Mote, with two unpublished sketches of Sir John Gilbert; though one may say that such a house was worth much more writing and much fuller illustration, if treated at all. Among other contents of the number is an article on the works of that original artist Mr. C. W. Bartlett, who is not half enough known to the general public in his own country; and one on the pottery produced at the Foley Potteries, Longton, most of which, to judge from the illustrations, is of considerable artistic merit, though we do not see evidence of the superiority which is asserted for it over that produced by some older firms. An illustration of a poster design by Hans Unger is a fine example of this class of artistic production.

The *Berliner Architektur-welt*, under the headings "Architektur" and "Plastik," gives a large number of illustrations of modern German buildings (with plans) and interior decoration.

The *Engineering Magazine* includes an article by Sir Benjamin Browne on "Standardising in Engineering Construction," in which the main point is that works, such as bridges, for the same conditions of bearing and load, might be carried out much more expeditiously and with more certainty if a standard or pattern design were adopted. "A large majority of railway bridges," for instance, "cross over roads or railways the width of which varies very little; and as there are probably hundreds, or perhaps thousands, of such bridges constantly being required in the world an engineer will, in most cases, do better to adopt an existing design, which has often been used and of which every possible weakness has been discovered by practical wear and tear, than to design something out of his own head. It will probably be better and certainly far cheaper." And the writer suggests that the reason an American firm was able to turn out the Atbara bridge recently in a much shorter time than any English firm could promise it, was that something like this system of standardising of designs and parts is practically adopted in the States. "The Revolution in Machine-shop Practice," by Mr. Henry Roland, tends in the same direction.

"Suppose the whole world buys a thousand of some particular machine tool in a year. The customer feeling the need of this tool naturally applies for it to the most conveniently reached machine-tool maker whom he deems capable of producing a satisfactory article; under these conditions, each one of the thousand of these particular tools required might be built in a different shop, and in this case each separate construction would of necessity be treated as a passing matter, to which no great consideration could possibly be given, because the price paid would not permit more care, more thought, and more expense. The result of these conditions cannot be otherwise than inferior, because there is no possibility of recompense for the thought and labour needful to produce the best form of this particular tool. But if all of these thousand tools demanded yearly could be built in one single machine-tool shop, it is plainly to be seen that the whole force of that shop might well be applied to perfecting the product in every detail, and to cheapening while enhancing its value."

Dr. Louis Bell contributes an article on "Electric Power in Engineering Works." The following is the final summary of the argument:—

"To sum up the case, experience now gathered from many large shops for some years past has shown:—First, that by distributing power electrically, and doing away as far as practicable with idly-running and under-loaded shafting, the gross amount of power needed for a given output is considerably reduced. Second, that by centralising the power plant and distributing electrically the net cost of the power for the given output is greatly decreased. Third, that by electric driving applied to special and portable tools and to means of transportation, the labour item in the cost of manufacture falls off to a notable degree; and finally, that special electric processes and electric lighting greatly facilitate the manufacturing operations, and not only improve the output, but better the general morale of the shop, on which, in the last resort, depends the ultimate economy of manufacture."

Feilden's Magazine for October contains the third part of an article by Prof. Vivian B. Lewes, on "Acetylene Generators," and a further contribution dealing with the building of the Great Central Railway. Some of the illustrations and details relative to bridges and other works in the Trent Valley district are worthy of attention. There is a description of what is called the "etrusion process of casting," where metal in a plastic condition is forced through dies of the required shape. At present the method has been applied only to the production of sections, bars and rods of malleable copper alloy. A summary of the world's engineering and industrial Press, which is to be a permanent feature of the magazine, will no doubt prove convenient to those who have little time for detailed reading of such literature.

The *Gentleman's Magazine* contains an interesting article by Mr. C. W. Heckethorn on "The Lost Rivers of London," those once visible tributaries which have disappeared beneath the streets and buildings of London, and of which the "Fleet Ditch" was the last

example visible above ground. Mr. J. Ellard Gore has an article on "The Coming Star Shower," in summing up which he states that, according to the most careful calculations, the middle or full period of the shower will be at six a.m. on the morning of November 16. Let us hope it will not be a November fog morning.

The *Century* includes an article on Cairo by Mr. F. C. Penfield, with illustrations by Mr. Philippoteaux. The author at the conclusion of the paper refers to the fact that while London, Paris, and New York each possess an Egyptian obelisk, Cairo is without that archæological decoration, and admits that he had schemes for bringing down the great obelisk standing near the river bank at Luxor, and setting it up in Cairo. A New York friend told him the proposal would bring a torrent of reproach from the whole civilised world; a Chicago man, on the other hand, offered five hundred dollars towards the expense and said he could get a dozen more Chicagoans to give the same. The counsel of New York, however, was right. It must be remembered that we imported to the Thames an obelisk already fallen. To remove one still *in situ* is another matter. An article on "A Roman Chorus" narrates the attempt of thirty-three students, men and women of Middlebury College, to dress up a Roman processional chorus with correct costume and instruments. The photographs show that the costume designing was at all events a great success; the American girls, as the writer says, assumed Tullia's garb much more easily than she could have adopted theirs.

In *Scribner* there is an interesting article by Mr. Jesse Lynch Williams on "The Water Front of New York." The illustration on the second page may remind readers of what we observed in a recent short article on New York—that it is becoming "a city of towers." Mr. Elmendorf contributes an article on what he calls "Telephotography," or photography with a camera lens placed in a specially constructed telescope. He seems to have succeeded in this way in getting some remarkably successful photographs of buildings from a remote standpoint. Under "The Field of Art" are some rather vague and mazy reflections on "Art in the Schools," which resolve themselves into the question of the objects of the art of painting; a matter which no one can define satisfactorily in words; it must be intuitively perceived.

The *Nineteenth Century* contains a short paper by Major Townsend on "Electricity in India." It is specially concerned with the problem of utilising the rivers and waterfalls in India for the provision of electrical power, which the writer considers to be a question of the utmost importance for the future prosperity of the country. "Cheap 'power' is what India wants for her full development as an industrial nation; and cheap power she cannot obtain from coal, except in Northern Bengal." Mr. Henry Wallis contributes a paper on "Thirteenth-century Persian Pottery." He mentions one lustre tile bearing the date 614 of the Hejira, or 1217 A.D. The Italian lustre ware dating only from the sixteenth century, these Persian examples carry the art much further back. Mr. Wallis writes on a subject he is familiar with both as archæologist and artist, and the article is naturally of considerable interest.

The little periodical of the "Society for Checking the Abuses of Public Advertising," published under the title *A Beautiful World*, contains a great deal of interesting and, we may add, encouraging information as to the progress of the movement which the Society was the first to start. A Prussian official report of the movement in England, and of the work of the Society, has been compiled by Mr. Muthesius, the Technical Attaché to the German Embassy, and published in the *Central-Blatt der Bauverwaltung*, and in several centres in the United States efforts have been made to take up action on the lines suggested by the English Society. We recommend all who are interested in checking the increase of disfiguring advertisements in our towns and in the country to procure and read *A Beautiful World*,* and they will probably become members of the Society which issues it.

The *Revue Générale* is a very interesting number, but none of the articles this month touch on subjects within our province.

* Published by John Bale Sons & Danielsson: London.

Climate, a small new quarterly journal, is intended to give English readers an idea of the conditions of life in various climates. "House-building in Tropical Africa," by Mr. A. H. Nye, who has built a small house in that region which is the subject of illustrations, may be of interest to our readers.

The *Quarry and Builders' Merchant* includes articles on Lundy Island granite quarries, on the Rappold patent drying tunnel for bricks and clay goods, and continues the series of articles on "The Mineral Industry of the United Kingdom." There is also a description, with plan and section, of a new chamber kiln heated by gas, the invention of a German engineer, Herr Gobbe.

The *Essex Review* (quarterly) is occupied in this issue with personal rather than architectural history. It includes a paper on Strype, the archæologist.

From the *Antiquary* we learn that the excavations at Waverley Abbey, commenced last year under the superintendence of the Rev. T. S. Cooper, have been continued during the summer with satisfactory results. The main object is to obtain a complete ground-plan of the Abbey buildings, and considerable progress has been made in this direction. Some of the old lead pipes have also been discovered which conveyed water from St. Mary's Well to the Abbey. They are in lengths of 12 ft. with collars at the junctions, and form part of a water-supply system carried out early in the thirteenth century.

THE ARCHITECTURAL ASSOCIATION OF IRELAND:

PRESIDENT'S INAUGURAL ADDRESS.

The following address was delivered in the Grosvenor Hotel, Dublin, on Tuesday, by Mr. G. P. Sheridan, the President of the Architectural Association of Ireland, at the annual general meeting of the Association:—

In the framing of an inaugural address, the initial difficulty often lies in the selection of a subject to enlarge upon. And with an architect, who is expected to treat on a subject allied to architecture and has to deliver his address to an architectural audience, this difficulty is realised to the fullest extent when he knows he must try to be original and interesting. But I must speak for myself, however, as my predecessors with apparent ease and in a masterly way not only fully interested us, but excited our admiration by the originality and eruditeness of their remarks; and I may say that, in following Mr. Pentland, it is with diffidence I inaugurate the Session to-night, and I crave your indulgence, should I prove wearisome.

> "The eyes of men,
> After a well-graced actor leaves the stage,
> Are idly bent on him that enters next."

Seemingly, everything allied to architecture and its practice has been lectured on times without number, and worn almost threadbare in the process. All matters which architects are expected to be deeply interested in have been served up in so many different ways, disguised by a piquancy of flavouring, that what might appear as a new confection is merely the *rechauffé* of what has repeatedly been considered in another form. "Architectural Education," "The Battle of the Styles," "Architecture a Profession or an Art," "Architecture and Engineering," "The Registration of Architects," "A New Style in Architecture," "The New Architect," &c., &c. (not to mention the Loop Line Bridge and the Electric Tram standards) have been thoroughly dealt with and elaborated upon.

Now, in planning a building for a confined and restricted site, the difficulties, which at first seem almost insurmountable, quickly disappear, and in a short time our efforts result in a satisfactory arrangement, the best the site can accommodate. But when we are given *carte blanche* to deal with an open site, and we are unrestricted by conditions, the number of schemes which present themselves to the architectural mind and the possibilities of good planning appear to be as numerous as the possible combinations of the pieces on a chess-board, so that in ideas we suffer from "embarras de richesse." It is much the same when one is asked to give a lecture or read a paper. Often, if the subject were defined, an amount of speculation and labour would be saved a lecturer, whose anxiety would be to interest and benefit his audience. Now, my troubles developed the more I considered what best to address you on, and in my despair my thoughts turned to our Association, and so I determined to be somewhat personal and talk of ourselves and our work, letting reflections on other matters follow, even as my thoughts might lead. My interest in our Association has always been intense and active, and although I cannot claim to the same weight and eloquence as my predecessors, I shall earnestly try at all times to further the well-being of the Association and advance its influence. I, therefore, address you as one of an Association of Students. For does not the oldest amongst us hold to be a student in architecture to the last, always learning, always striving after improvement, endeavouring to express in material form those ideas of high purpose he believes to be compatible with generous natures; and more fully to realise the meaning of the true and beautiful in architectural composition? The experience I have described prompts me to make a suggestion for the consideration of the committee. It is this. That even if the subject to be dealt with in the inaugural address is not selected by our committee, perhaps the titles of some of the papers to be read and discussed at our general meetings might originate with that body, who could arrange with one of our members to make himself thoroughly acquainted—if he has not already done so—with whatever subject is fixed upon and repeat to us the result of his researches and experience, and be prepared to reply to the queries which may follow the discussion. By this method, our secretaries will, I think, have less difficulty in providing for the success of our general meetings, greater variety will be secured in the nature of the papers read, and matters of special value to our members will be discussed, adequately meeting the requirements of architectural education which an active committee would have catered for.

It is unnecessary you should be wearied with many retrospective references, as the report you have heard deals fully with the work of the past session. We are a youthful Association, being but three years in existence; but our past, short as it is, can be summed up in one word—"Success." We may fairly claim to have done good work and to have aroused amongst the younger members an enthusiasm which, I think, has never previously been understood in Dublin. A long-felt want has been supplied. We came together to form a society for the encouragement and advancement of architectural education, and to further the interests of the pupils and younger members of the profession. Previously a young architect received little encouragement to submit to a course of training which would assist him in acquiring that knowledge, skill, and judgment calculated to develop thoughts and aspirations which should accompany and influence his future researches and artistic advancement.

There were no lectures embracing enough to open his mind to the possibilities and scope of his art; nor were there classes to attend, whereby he might receive instructions in the fundamental principles of his calling, and guidance as to the direction of his studies. And even socially he was at a disadvantage, as he was unacquainted with most of his fellow-students in the city, losing thereby the pleasures of associating with kindred souls—to compare notes, interchange ideas, and encourage that good fellowship which such friendly intercourse always creates.

Happily all this has been changed. Some enthusiastic spirits amongst us felt the need of an association like those in England, and at once took praiseworthy action; approached others who supported their project and efforts, and as a result a representative and numerously attended meeting was held, and the Architectural Association of Ireland was inaugurated under very encouraging auspices. It has been steadily doing good since, although the early enthusiasm has somewhat abated. The general meetings have been well attended, the papers were highly instructive, and the discussions were well sustained. Classes have been formed which many of the younger members regularly attend, and earnestly try to benefit by the instruction given.

The aspirants to a proficiency in sketching are many, and visits to buildings of architectural interest are organised at regular intervals. Lastly, the intimacies and good fellowship which have arisen amongst us, through the

general work of the Association, supplemented by occasional social reunions, are in themselves sufficient to command our sincere thanks to those gentlemen who took the initiative in the formation of our Association.

But, gentlemen, my duty to-night is not so much to dwell on the past as to consider how best to direct our conduct in providing for the near future, and encouraging an earnestness in mutual assistance towards that improvement which is calculated to best help us in expressing the nobler aspirations of the age in creations of the true and beautiful, and which may be a benefit and a pleasure to our fellow men.

> "The future hides in it
> Gladness and sorrow;
> We press still thorow,
> Nought that abides in it
> Daunting us—Onward!"

Yes, onward we shall proceed—working together for our general advancement, and proving we are still instinct with those artistic leanings common to our Milesian origin.

The success of the Association as an educational body depends on the individual volition of the members. If they wish it to succeed, no doubt it will succeed. If they conscientiously try to participate in the advantages to be derived from the work and aims of the Association, they will benefit themselves and raise its status and representative character. The younger members should attend the general meetings as regularly as possible, read up, to some extent, the subject to be enlarged upon, take part in the discussions, and ask as many questions of the lecturer as their ready wit may prompt them to. I need hardly refer to the importance of attendance at the classes; here you are directly in touch with the instructors, and your wants can be particularly catered for. You should take ample notes and have them revised and corrected, and, above all, honestly and thoroughly work out the designs, problems, and exercises arranged by the instructors to be done at home.

Perhaps of all the classes the Sketching and Measuring class is the most important. We all know sketching is inseparable from an architect's education—how it trains the eye in proportion and judgment, concentrates the attention on detail, and assists the mind in understanding and recording the effects produced in deceased architecture. I exhort you to practise it when and where you can, for it is astonishing what proficiency may be arrived at by a little persistent work. Endeavour to be accurate—take pains—and stick to it. I knew a young fellow to secure the Travelling Stndentship of the Architectural Association of London a few years after he commenced to practise sketching. At the start his attempts were wretched failures, but by persistent effort—by taking pains and by hard work—he acquired a facility with his pencil that easily won him the prize. And, further, it naturally follows you are brought to study buildings and remains of architectural and archæological value, which may contain lessons in style and precedent and illustrate a period of architectural chronology. You are induced to formulate an opinion as to the merits of the proportions and detail, and you analyse the composition to understand the reasons why certain emotions are excited as you contemplate it.

Another advantage in being a member of the Sketching Class is that you will be afforded opportunities of visiting and sketching buildings which, as an individual, you might not so readily have access to. Many of us can refer with pleasure to a visit to Powerscourt House, and to the kindness of Lord Powerscourt in personally conducting our party over the mansion, repeating its history and associations and drawing our attention to its special features and to the works of art and virtu it contained; and sequentially we hope next summer to obtain permission to visit several of the many other residences in the vicinity of Dublin possessing interest for us as architects.

My anxiety to impress on you the importance of participating in our society's work resolves itself into a warning to the younger members to guard against any tendency towards retrogression, as possibly we may be at a turning point in the life of the Association (and this must be my apology to my seniors and masters for dragging them over ground already well traversed). After experiencing the first flush of enthusiasm, a reaction may set in, the earnestness cool off, and apathy take the place of worthy effort, unless students are awakened to the advantages held out to them, and to the benefits to be derived from a system of Architectural education — supplemental to office work—and well suited to assist in an effective training of the hand and mind.

What are the advantages of this education I have been so constantly referring to? How does it influence an architect who has to earn his living by superintending the moulding into material form the creations of his fertile imagination? Well, there are perhaps many advantages, as, for instance, expression and expertness in design — the power of knowledge—insight into the possibilities of further research, &c. But an advantage I place above these, and which these must lead up to, is the development of a mental condition which seeks to investigate what architecture is, and endeavours to understand why certain forms are beautiful and why varied emotions are excited in the contemplation of different buildings. In order that an architect might be able to create an architectural composition to give pleasure to those who shall behold his work, it is well he should have knowledge of some of the causes which influence appreciation. Architecture depends a great deal for its attribute of beauty in the manner in which it occupies space, and it is not dependent on ornamentation, and consequently I believe architectural beauty for the most part consists in the due proportion observable in the outline of a building and its several parts.

Colour, to a certain extent, adds beauty to architectural works, but in order that it should do so it must, I think, have the character of necessity, and not of having been adopted for the sake of ornament alone—contrast a red brick building with one that is painted brick colour.

The knowledge of the nature of materials and their adaptability to the uses for which they are employed also influences ideas of beauty. The history of architecture in its archæological sense is a history of the progress of man's knowledge of the use and nature of building materials. This is noticed in the gradual lengthening of the column in proportion to its thickness which we observe in the Greek and Roman orders. And when experience taught what the arch in Gothic architecture could sustain, the span grew wider and wider until the Tudor arch was evolved. And the qualifications of the materials in any country to some extent explain the peculiar characteristics of its architecture.

Again, I think a building, to be beautiful, must give us the idea that it is able to withstand the injurious agencies of nature, which are always tending to destroy it. It should appear stable and not top-heavy—and that material which appears the most lasting to some extent affects the mental condition forming ideas of beauty.

The emotion of the sublime may be excited by the size of the building. If of great height, the feeling may be that of fear of the pile falling; but this feeling might be caused by a somewhat similar condition in nature, as by a high perpendicular cliff. But the emotion of sublimity produced by buildings of architectural merit arises when we reflectively connect their existence to the mind that conceives them and to the mental effort of guiding the progress of the work. The difficulty with which we know an architectural work to have been accomplished, perhaps, adds still more to the emotion of the sublime. A certain amount of recurrence of the same effect in a building gives us an idea of sublimity because it suggests the whole edifice, is the effect of one single conception in the architect's mind. Beauty, in effect, is added to a building when it expresses the uses for which it was erected.

These are some of the ideas and forces that influence the mind when seeking for sublimity and beauty in work embodying architectural aspirations. And I may add that simplicity, when used as a means of obtaining a successful effect in architecture, always lends dignity to beauty. Similarly, truthfulness in construction, when expressed with simplicity and unobtrusiveness, is associated with beauty.

> "How much more beautiful doth beauty seem
> By that sweet ornament which truth doth give"

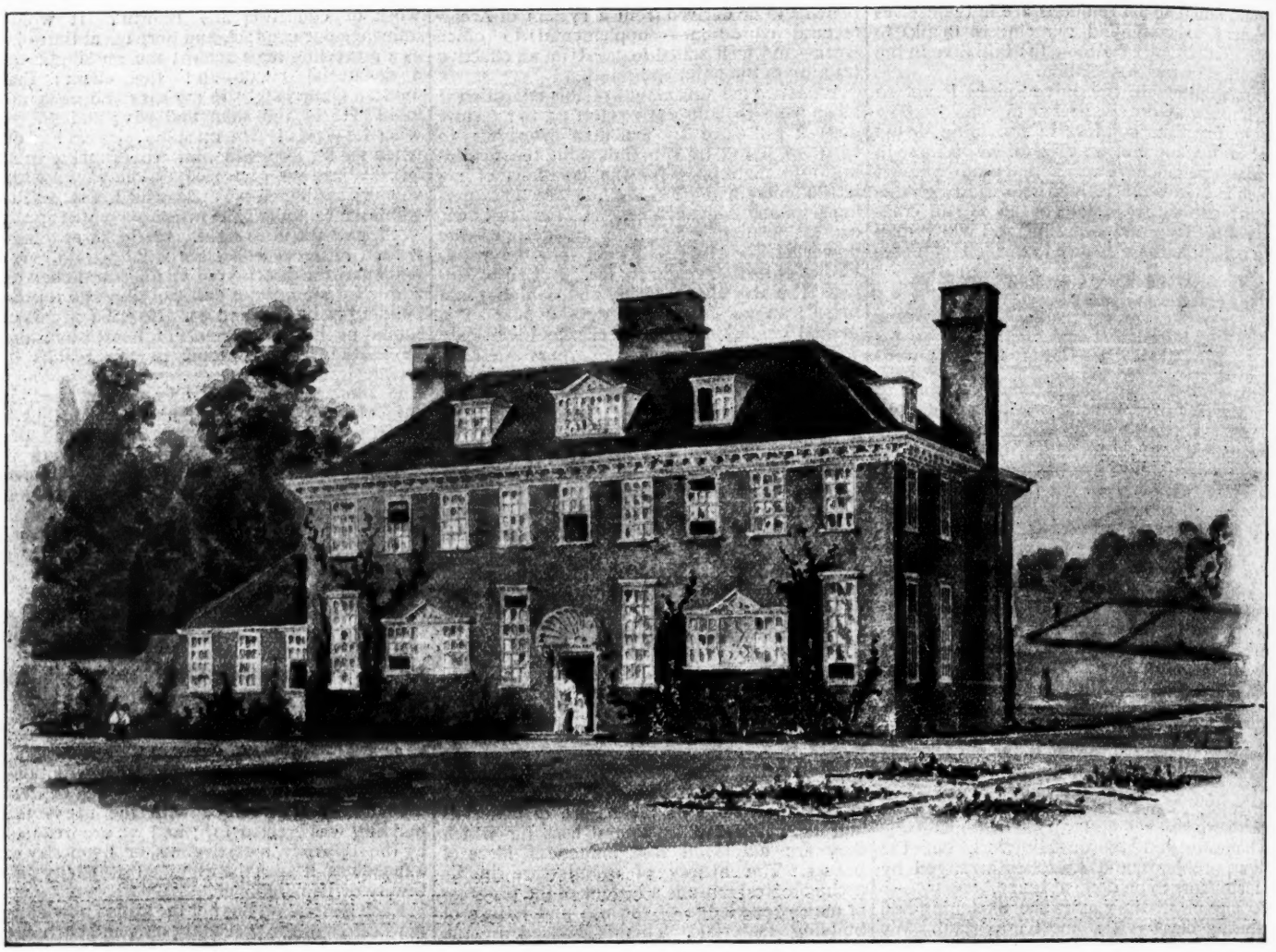
—a noble thought beautifully expressed; one to be enshrined and to which we could turn for encouragement and strength in our struggles after the realisation of refined aspirations expressed architecturally. Why should we not make that graceful couplet the banner under which our Association could advance in its work of education and reform? It would influence our conduct, and perhaps at times be as a protecting ægis against the onslaughts of a dictatorial client—ah! the client; that modern Quilp laughs in my ears and calls me fool! He is the man that pays and knows what he wants! He must be pleased! And when we try to please him we probably shall fail. When we give richness he says we are vulgar; and when we endeavour to express the wants with simplicity he insists our work is poor. Well, perhaps he is right. He looks at things with a different eye from what we do. He influences the direction of architectural change, and may stamp the spirit of the age on the building rising around us. No; the architect should be the interpreter of expression, and he should reign supreme in the realms of architecture.

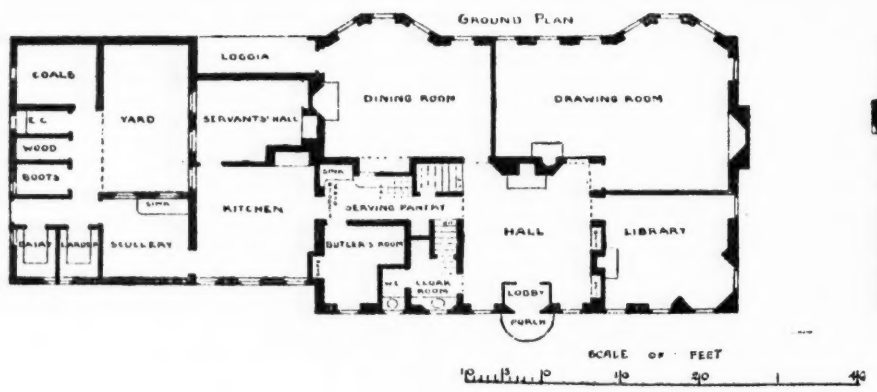
Is life worth living? "Punch" replied, It depends on the liver! That may be, but I fancy, somehow, a good deal depends on the architect. Our existence to some extent is wrapt up in and influenced by the creations of his imagination, and is affected by his mental condition as reflected in his work. As a man is, so shall his works be. The individualities of the architect will speak out their identity. Design may be the expression of an idea; and if that idea is engendered by aspiration of a high order, so will it be expressed in material form. If, on the contrary, the master mind is govered by passion, sordid and ungenerous, we shall be conscious of a feeling of uncertainty and distrust, stamped on the product of his brain.

We are uneasy when we behold in our streets buildings supported by pipe-shanks; we are troubled with convulsive emotions when we have to look at works which express uses totally at variance with the needs the building was erected for; and we are irritated by the flippancy, assertiveness, or hypocrisy of a façade as it apes the dignified simplicity and beauty of its neighbour.

Each generation has not the same knowledge nor desires as the preceding one, and each age has its special good points and its special character stamping the architecture of the period with the general aspirations of the community. We are always changing, always moving onward, and so architectural judgment is likewise influenced. In this very practical and material age the fine arts are considered as something apart, and not as an embodiment of the public mind as in epochs past. And it is difficult to say in how far the work of to-day repeats architecturally the aspirations and characteristics of the times we live in. What is the dominant note to which modern architecture is attuned? What harmonies in modern life are carved and expressed in material shape? What new cult is attracting devotees and imperceptibly influencing the public mind? In this restless age, when the spirit of keen competition creates a feverish desire for change and novelty, it is very difficult to point in what direction the tendencies of to-day appear to be drifting. But perhaps I may not be far astray in suggesting that a "studied simplicity" is apparent in the *motifs* of modern life. I think it can be traced through the different phases and conventionalities of our every-day existence. People assume a virtue, if they have it not, in simplicity of manner and address, and decry the extravagances of a former generation. They will reject with affected disgust the ornate and massive, and display a ready preference for the opposite though it borders on the crude.

It peeps out in our social relations, and even in the fashions affected by the fair sex, "who are blest with each grace of Nature and of art," we see an attempt at this "studied simplicity." I have called it a "studied" simplicity, because the adjective stamps it as spurious. It lacks the grace of refinement—of true and unconscious simplicity and the dignity and breadth of restraint. And modern architecture taken *en masse* is beginning to express in material form this spurious simplicity. I might even go farther and say that, as the result of this tendency, a cult in architecture has developed which might be described as the "cult of crudity." It is certainly untrammelled architecture, as all sorts of liberties are indulged in and departures made from what has been considered orthodox. Academic architecture is left severely alone, and the gradual development of centuries methodically ignored. And all this is to be accounted for by the effort of the every day architect to appear in his work





Plans.

House in the New Forest.—Mr. J. Ransome, A.R.I.B.A., Architect.

as a man possessed of superior knowledge, and to suggest that he could do a great deal more if he tried, or show his independence of precedent by endeavouring to gain a commanding effect by a "studied" simplicity in composition, supplemented by a crudity in detail almost unparalleled in the history of our art. Great wall surfaces without any counterbalancing and contrasting features are thrust at us, or, perhaps, a strip of sculpture is crudely planted on which has no meaning in the unity of composition. Entablatures are distorted and the parts perhaps interchanged in a way calculated to make you reflective if not sad. Columns are attenuated and appear without a base, or are finished with a sickly mould in lieu of a cap, or again, are distorted with an appalling entasis associated with an ill-used bolster, and perhaps are laden with rustications to such a pronounced effect as to present the appearance of a scarified salmon.

Instances might be multiplied if time permitted. But I must not pass on without letting you understand my references are only in a general sense. Excellent work is done now, which may well be said to embody the true and beautiful in a way which demands our admiration, and in which departures are made from proportions which for generations had been accepted as fundamental in good design, and in which originality is not defined so much by novelty as by modified adaptation of precedent, carrying with it respect for that which has gone before.

Simplicity with the authors of these works meant repose, and unity, and restraint, and truth; they introduced ornament where ornament spoke to you most, or omitted it where truth could best be expressed without it. These men are working up to high ideals. They make the sciences subservient to the principles of design and expression; they are not afraid to accept the advantages which science empowers them with, as they understand it is only knowledge which can be viewed and considered architecturally. They consulted the past for suggestion, and understood the feelings which moved the early architects, who, as Smiles in his book on "Duty" says, "Put their spirit into their work; they put religion into their work. Their architecture had life, and truth, and love, and joy in it. It was chiselled music."

THE NEW RUTLAND HALL, HOVE.—The foundation stone has just been laid of the Rutland Hall, Hove, which is to be erected in connexion with the Cliftonville Congregational Church. The architect is Mr. W. H. Nash, and Messrs. Brown & Son are the builders.

HOUSE IN THE NEW FOREST.

THE house here illustrated, called "Burley Hill," has been built in the New Forest, at a short distance from Burley Village.

The design has been very simply treated, in harmony with the early Georgian style of the old buildings in the neighbourhood.

In addition to the rooms shown on the plans, there are six bedrooms on the second floor.

The architect is Mr. J. Ransome. The ornamental plastering work has been executed by Messrs. Jackson & Son.

CONGREGATIONAL CHURCH, EXETER.—A new Congregational church in Friernhay-street, Exeter, has just been opened. The platform is raised three steps above the body of the church. The carved oak pulpit with reading desk and carved communion table are the work of Messrs. Harry Hems & Sons. The contractors for the general seating, which is in pitch pine, were Messrs. West & Collier. The stained glass work is being executed by Messrs. Jones & Willis, of London; Messrs. F. Drake & Son, of Exeter; and Messrs. Mitchell, of Exeter. The electric lighting is by Messrs. Brooking & Co. Messrs. Wippell & Co. supplied the brass pulpit desk as well as other brass work. The general contractor for the alterations is Mr. W. Brealy. The whole of the work, including all the oak carving, has been executed from the design of the architect, Mr. Harbottle Reed, of Exeter.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION:

THE REGISTRATION OF ARCHITECTS.

The first meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 13th inst.—Mr. W. B. Hopkins, Chairman of the Section, in the chair. A debate on "The Registration of Architects" was opened by Mr. G. A. T. Middleton and Mr. A. R. Jemmett.

Mr. Middleton briefly sketched the present state of the profession, and dwelt upon the fact that any one, however incompetent he might be, was allowed to pose as an architect, and he advocated compulsory examination to test the fitness of any one proposing to enter the profession.

He stated that, largely owing to the examinations held by the Royal Institute of British Architects, there had been in recent years a distinct raising of the level of competence among practising architects, and urged that examination showing the minimum of qualifications was necessary. He then dealt with some of the objections made against registration, and claimed that compulsory examination would tend to the improvement of architecture by requiring better training of architects, and stated that all men could be trained to produce work which should at least not offend against good taste.

Mr. Jemmett, in opposing registration, defined an architect as an artist who can do all that any constructor can do, and in addition do it in a pleasing manner, and he did not think he could be labelled by Act of Parliament. He considered that the examinations of the Royal Institute of British Architects appeared to argue the existence of a too professional ideal. The important thing being the intellectual life, architects should cater for that and not for the material life. He did not consider that we could examine in art. Finally, he opposed registration on the ground that it would increase the expense of an architect's education, and so keep poor but artistic students out.

Mr. H. V. C. Smith strongly supported registration, as did also Messrs. Cautley, Pearson, Pryer, Garbutt, and G. H. Smith.

Mr. M. B. Adams opposed registration because, though an architect cannot divorce himself from practical details, yet his work must be judged from an artistic standpoint. He felt that it was impossible to examine in art.

Mr. Ellis Marsland said he was convinced of the necessity of registration. Architecture was not a fine art pure and simple; it was also a science; therefore an examination was possible, and he felt that there being an artistic side to architecture was an additional argument for registration.

Mr. McA. Butler gave some details of the Registration Bill now before Parliament, and dealt with the objections put forward.

Mr. A. S. Taylor opposed registration, and Mr. Brodie said he did not see any necessity for registration.

The Chairman spoke briefly, generally supporting examination, and called on the special Visitor, Mr. W. H. Seth-Smith to close the discussion.

Mr. Seth-Smith strongly favoured registration, and incidentally remarked that the Architectural Association started the registration movement some forty years ago.

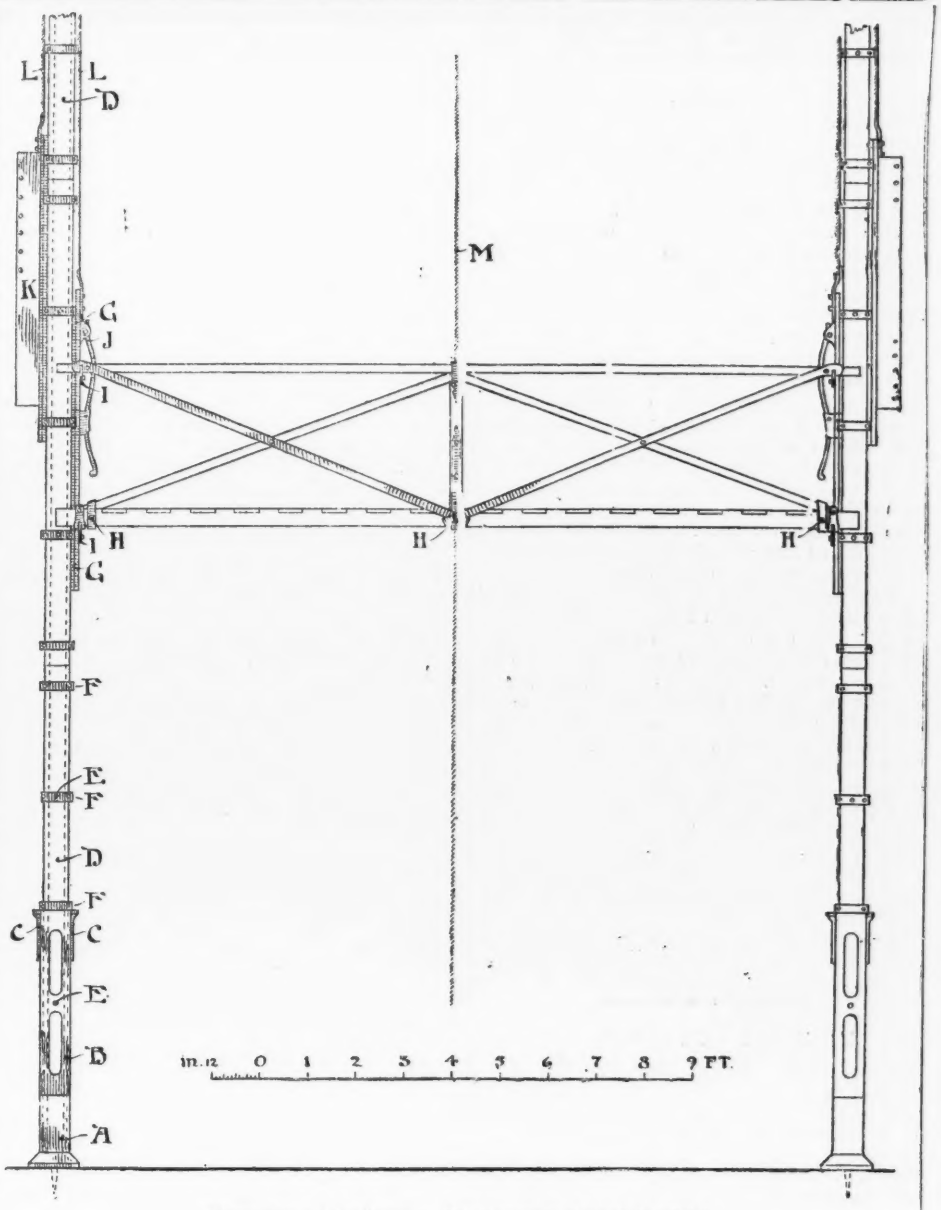
A vote of thanks having been passed to the openers of the debate and to the special Visitor, the meeting terminated.

A NEW SCAFFOLD.

At the so-called "British and Colonial Exhibition" now open in Manchester, there is an exhibit of particular interest to builders, namely, Andrews & Challenger's patent scaffolding. This has been designed to replace the swinging cradles from which buildings are so frequently pointed and painted, and which have been so fruitful a source of accidents. The original patent was completed in March, 1896, but as the apparatus then specified and illustrated was somewhat incomplete, improvements have since been made, and the scaffolding has at length been tested in actual work and placed upon the market. Our illustration has been prepared from the full-size scaffolding in the exhibition, and not from the patent-specification.

The ordinary apparatus consists of two upright standards, between which a cradle runs up and down. Essentially, therefore, the invention is very simple, but much thought has been devoted to the details, in order that the whole can be rapidly erected and removed, and packed into small compass so as to be easily carried from place to place. Each standard has a malleable iron base, A, which can be either provided with one or more spikes for securing it to the ground, or shod with india-rubber to prevent it slipping on a hard surface. Above this is a malleable iron casing, B, on opposite sides of which are two strong spring buffers, CC, for reducing the jar and strain in case either the cradle or the balance-weight should descend too rapidly. The standard itself, D, is of wood, and consists of a hollow outer casing, 6 in. by 6 in., made of pine 1 in. thick, and a solid inner piece of pitch-pine 4 in. square. With the exception of the top casing and bottom filling-piece, which are 5 ft. long, all the cases and fillings are in 10-ft. lengths. Security is obtained by making the cases and fillings break joint; thus, the lowest outer casing is 10 ft. long, and runs down into the base, and a 5-ft. filling-piece occupies the lower half; above this a 10-ft. filling-piece is placed, and projects therefore 5 ft. above the top of the outer casing; the second length of outer casing encloses this projecting portion, and also the lower 5 ft. of the next filling-piece; and so on. The filling-pieces are soaked in fish-oil or other damp-resisting liquid, to prevent swelling. We may point out that, in erecting the standard, the uppermost length is first suspended in a pair of shear-legs, and the standard is built up from below, the completed part being gradually raised to admit of the insertion of the additional lengths. The casings and filling-pieces are bolted together at intervals by means of the bolts marked E E, two in each 10 ft. length. The casings are stiffened by means of wrought-iron bands, F F, about 2 ft. 4 in. apart, wh ch are provided with projections on opposite faces of the standard, so arranged as to form dovetailed guides for the runners, G G, to which the cradle and balance-weight are attached. The top of each standard is fixed to the wall of the building by means of strong spike-nails or drift-bolts, and intermediate nails or bolts are used if the height of the scaffold requires them. A projecting arm or bracket is fitted to the top of one or both standards, and provided with a pulley, so that the materials required by the workmen in the cradle can be easily raised. The cradle is carefully designed, and can be taken to pieces very rapidly. The length of the cradle at Manchester is 16 ft., but it is intended to make cradles up to 32 ft. long, so as to allow four men to work at the same time. The top and bottom rails and the two compression members are of hickory, and the tension bars and straps of steel. Additional strength is given to the bottom rails by inserting in the soffit of each a ½-in. steel rope securely fixed at the ends. The floor is formed of spruce boards simply let into dovetailed sinkings in the bottom rails; they can, therefore, be placed in position and removed with the greatest ease. The three bolts, marked H H H, pass quite through the cradle from side to side. At each end of the cradle is a runner of cast steel, G, dovetailed in section so as to slide securely between the corresponding projections of the standards. To this runner the cradle is secured by means of two cast-steel bearers, I I, fixed with bolts. A spring locking arrangement, J, is fitted at each end of the cradle, so that the cradle can be fixed to any of the bands around the standards.

The weight of the cradle and of the men and materials it has to carry is supported by the balance weights, K K, steel ropes, L L, being carried over pulleys in the head of the standards for the purpose. A metal cap is fitted over each pulley to prevent water entering the standard. The balance-weights consist of sheet-steel boxes, which can be filled with



Elevation of Andrews & Challenger's Patent Scaffold.

sash-weights of iron or lead, or in some cases with sand ; doors are provided in the boxes for the insertion and removal of the weights.

The rope, M, is for raising and lowering the cradle, and is fixed at the top and bottom ; to raise the cradle, the workman must take hold of the rope as high as possible and pull *down*, so as to relieve the cradle of his weight ; to lower it, he must take hold of the rope near the floor of the cradle and pull *up*.

It is claimed that scaffolding of this type can be built to a height of 150 ft. or more, but the standards would certainly have to be of greater strength than those shown in our illustration. The scaffolding at Manchester appears amply strong enough, but is only 35 ft. high. The time required to erect a scaffolding 80 ft. high and 30 ft. wide is said to be about five or six hours, which, of course, is a very great saving over the time required to erect an independent scaffold of the same size.

For detached objects, like the Nelson monument in Trafalgar-square, four standards would be used in the form of a square, with a cradle on each side, but special standards would be required, as there would be runners for cradles and balance-weights on all the four faces.

The invention is undoubtedly of great merit. It can be adapted both for external and internal work. For the decoration of the interior of churches and other lofty rooms it will be particularly useful. Time is saved, not only in consequence of the ease with which it can be erected, but also because of the rapidity with which the workmen can ascend and descend. The inventor assures us that twenty men have stood at once in the 16-ft. cradle without injuring it in any way, so that as far as strength goes, the cradle may be considered perfectly safe under all ordinary loads. That the apparatus will be safer than the swinging cradles it is designed to supersede, cannot, we think, be doubted. It is somewhat dangerous to prophesy, but we venture to think that Messrs. Andrews & Challenger's invention will be a success.

HAMPTON SEWAGE WORKS.

These works, carried out under the supervision of Mr. J. Kemp, the Engineer to the Hampton Urban District Council, in conjunction with Messrs. Shone and Ault, were opened on Saturday last. The three principal features in connexion with the work are (1) the whole district is drained on the Shone hydropneumatic system ; (2) the works, with the exception of the machinery and air and sewage cast-iron mains, have been carried out departmentally without the intervention of a contractor ; (3) the biological treatment of sewage has been successfully put in operation for the whole district, and in a more complete manner than any other place in the country.

There are eight ejector or lifting stations, and about seven miles of cast-iron air and sewage mains. The sewage is collected at these stations and lifted by compressed air direct into bacteria beds. The air is compressed by steam-engine air compressors installed at the outfall works, and distributed in cast-iron mains, varying in diameter from 3 in. to 7 in., to the several ejector stations, where it is automatically admitted to the ejectors and discharges the sewage through cast-iron rising mains, varying in diameter from 7 in. to 16 in., to the outfall. The total length of sewers is over sixteen miles, laid in waterlogged ground.

The bacteria beds are fifteen in number—five coarse, five medium, and five fine material ; triple contact. The bacteria beds are built in three terraces, five beds in each terrace. The upper beds, 50 ft. long by 34 ft. wide and 4 ft. deep, are filled with clinker that has been rejected by a screen with ½-in. mesh. The middle beds, 54 ft. long by 35 ft. 6 in. wide and 4 ft. deep, are filled with clinker which has passed a ½-in. mesh, the fine dust being rejected. The lowest beds are again of increased size—58 ft. by 35 ft. 6 in. and 4 ft. deep, filled with finer material, which might be called clinker sand. The sewage in the first instance passes through screens, which retain all large and undissolved material before the sewage is admitted to the upper or coarse bacteria beds. It then flows on the upper bed till all interstices between the clinkers are filled with sewage, when it is left standing in the coarse bed for an hour, to allow the minute organisms, which cover every particle of the clinker, to attack the organic matter contained in the sewage. The sewage is then allowed to flow into the next terrace, and as it flows out air takes its place in the coarse filter, supplying the bacteria with oxygen necessary for their existence. Each of the fifteen bacteria beds is worked in this intermittent way, one hour being allowed for filling, one hour for standing when filled, and one hour for emptying the beds of their charge of sewage. Subsequently, each bed is allowed to remain empty and exposed to the air from four to five hours. Each bed is therefore worked on an average three times in twenty-four hours. The effluent from the third series of beds is practically pure and sparkling water, and meets the requirements of the Thames Conservancy ; to comply with the requirements of the Local Government Board, however, that the effluent should be passed over land, an arrangement known as the Effluent Aërator Lift has been installed. This is a unique and novel combination, whereby large volumes of air are forced into, agitated and intermingled with the fine-bed effluent, in order to secure further purification. The effluent is then carried away through the effluent pipe a distance of 3·15 miles to the Thames, at a point near Hampton Court, and well below the water companies' intakes.

The compressor station, consisting of engine and boiler house, chimney shaft, workshop, office, and workmen's room, is situate at the outfall works.

The machinery, which is in duplicate, consists of two 15 nominal horse-power horizontal steam-engine air compressors, with surface condensers, each air-compressing cylinder being driven direct from the tail-rod of the steam-cylinder. The steam-cylinders are 12 in. diameter by 18 in. stroke, and the air-compressing cylinders 15 in. diameter by 18 in. stroke. Each engine is provided with a surface condenser with air and circulating pumps, and is capable of ejecting the sewage of 7,500 people, reckoning the discharge equal to 50 gallons per head per day.

The boilers are of the dry-back semi-marine type, each 7 ft. diameter and 7 ft. long.

The cost of the whole work has been something over 60,000*l*.

COMPETITIONS.

County Buildings, Mid-Lothian County Council.—The number of designs sent in in this competition was twenty, and the award of the assessor, Mr. W. W. Robertson (Surveyor for Scotland, Her Majesty's Board of Works), was as follows :—(1) Messrs. J. N. Scott & A. Lorne Campbell, 44, Queen-street, Edinburgh ; (2) Mr. Hippolyte J. Blanc, 73, George-street, Edinburgh ; (3) Messrs. McArthy & Watson, 25, Frederick-street, Edinburgh, and Mr. George Watson, 4, Hope-street, Edinburgh ; (4) Mr. J. Macintyre Henry, 7, South Charlotte-Street, Edinburgh ; (5) Messrs. Paterson & Horsburgh, 5, York-place, Edinburgh. Other designs considered worthy of mention by the assessor were submitted by Mr. E. Goldie, 31, Upper Phillimore-place, Kensington, London ; Messrs. Armstrong & Knowles, 38, Grainger-street West, Newcastle-on-Tyne ; Messrs. Bartlett & Cooper, 8, Bream's-buildings, Chancery-lane, London ; and Mr. Wm. Dow, 259, High-street, Kirkcaldy. Under the powers reserved by them in the conditions of competition, the County Council selected the plans submitted by Mr. J. Macintyre Henry, 7, South Charlotte-street, Edinburgh, as they considered that these plans more nearly met the requirements of the Council than any others. Mr. Henry was accordingly selected to carry out the work.

Presbyterian Church at Blackburn.—The designs submitted by Mr. F. W. Dixon, of Corporation-street, Manchester, for the erection of a new Presbyterian Church at Whalley Range, Blackburn, have been accepted by the Committee, on the recommendation of the assessor, Mr. Potts, of Manchester. The second premium of 20*l*. was awarded to Mr. F. J. Parkinson, of Richmond-terrace, Blackburn, and the designs of Messrs. Butterworth & Duncan, of Rochdale, were placed third. The new church is estimated to cost 4,000*l*., and will accommodate 600 persons.

Savings Bank, Norwich.—The Board of Management of the Norwich Savings Bank have awarded the premiums for the three best designs in order of merit in the competition for plans for the new banking premises in Red Lion-street, which was open to practising resident architects of Norwich and Norfolk. Some seventeen architects lodged sketch designs, a number submitting in addition alternative plans and elevations. Messrs. G. J. & F. W. Skipper, of Norwich, who were placed first, have been commissioned to carry out the work, the other premiums being awarded to Mr. A. S. Hewitt, of Yarmouth, and Mr. Herbert J. Green, of Norwich.

Public Parks for Barry.—The Parks Committee of the Barry District Council have considered a series of competitive plans sent in for laying out the Victoria Park, Cadoxton, and the Romilly Park, Barry, and after due consideration the committee decided to recommend to the Council that the first premium of 100*l*. be awarded to "Hort," whose estimate of cost for the two parks was 10,456*l*. 4s. ; second premium, 50*l*., to "Caledonia," whose estimated cost was 6,090*l*. 10s. ; and a third premium of 25*l*. to "Euphrasia," who estimated the total cost at 9,361*l*. 19s.

ST. JAMES THE LESS, CLERKENWELL.

The parish church of Clerkenwell was reopened last week upon the completion of an extensive renovation and decoration of its interior by Messrs. Campbell, Smith, & Co., of 75-7, Newman-street, under the superintendence of Messrs. J. S. Paul & Sons. The new works comprise a choir-vestry, a wrought-iron chancel screen with open pulpit, mosaic pavement in the nave and chancel, electrical lighting, and repair of the organ by Messrs. Gray & Davison). In 1883-4 a sum of 4,000*l*. was expended upon the fabric by the advice and under the direction of Sir Arthur Blomfield, who had reported that "the roof, the tower and spire, the parapets and copings, the stone dressings and stringcourses and the building generally, will need repairs of a somewhat costly character," and that "the whole of the plain glazing is in a bad state, and should be entirely new." Upon Sir Arthur Blomfield's recommendation the east end was greatly improved, the awkward staircases at that end were removed for better ones at the west end, the seats were re-arranged, a new floor was laid, the crypt was put in order, the church was heated with Grundy's hot-air apparatus, and sundry other works were executed. The present fabric, designed by Carr, was begun in December, 1788, and consecrated on July 10, 1792, by Dr. Porteus, Bishop of London ; the spire was rebuilt by W. P. Griffith about forty years ago. In 1796 the organ, by Richard Bridge, was removed to Beccles, Suffolk, and replaced with one by G. P. England. The Crowle Pennant contains a set of coloured drawings of all the tablets and many of the monuments, some since destroyed, in the old church. The former church, of brick and stone, with a brick tower as rebuilt in 1626, had been the choir of that of the Benedictine nunnery, founded, near the ancient fons clericorum, in about 1100 by, Stow says, Jordan Briset. In his map Aggas depicts the parish clerks' well as gushing forth from the convent's west wall into the basin described by Stow as "curbed about square with hard stone." Of that well, beneath the watch-house (rebuilt two or three years ago for business premises), cited by Strype, a relic may now be seen fixed against the west wall of the church tower—namely, the front of the iron pump, with its spout, that formerly stood in Ray-street. In the vaults was buried Weston, last Prior of the neighbouring Priory of St. John of Jerusalem, who died of grief on Ascension Day, 1540, the day his Order was suppressed ; at the dissolution of the nunnery its prioress was Isabel, daughter of Sir Richard Sackville Lord Buckhurst, advanced, 1603, Earl of Dorset.

Cottage Hospital, Colwyn Bay.—A cottage hospital has been erected at Colwyn Bay, as a Diamond Jubilee Memorial. The hospital is situated at Groes, half-way between Colwyn Bay and Colwyn. The building is from the designs of Messrs. Booth, Chadwick, & Porter, architects, Colwyn Bay. The structure comprises a main building containing, on the ground floor, an operating-room and special ward, with kitchens, &c., at the back. A wing on the right forms the men's ward, and another on the left provides the women's ward, while the story in the main building gives the necessary bedroom accommodation for the staff. Provision has been made for future extensions by the enlargement of the wards and the formation of an operating theatre at the back. The present accommodation of each ward is three beds. Ruabon red bricks were used for the building, with terra-cotta and Yorkshire stone dressings, and the floors of the wards and corridors are of pitch-pine blocks. The contractor was Mr. D. E. Berth Jones, of Colwyn Bay.

FIRE TESTS.

The British Fire Prevention Committee started its winter session on Wednesday by arranging a private view of its testing station at Regent's Park, and showing a series of experimental tests with a concrete floor, with an iron safe, and with some wooden doors.

The floor was of steel girders with a concrete filling prepared on the lines recently required by the London County Council. The fire was intended to be of 2½ hours' duration at a temperature of 2,000 deg. Fahr., but the floor collapsed in approximately an hour and a half, before that temperature had been quite reached.

The safe was tested under similar conditions; it bulged badly, and could not be opened at the close of the test to see the effect on the contents.

Regarding the doors, they were of solid 2-in. deal and 2-in. pitch pine, and the duration of the test was one hour, at a temperature reaching approximately 1,500 deg. Fah. The fire began to break through after about a quarter of an hour, but the doors did not collapse until quite fifty minutes after the commencement of the test.

The testing operations were conducted by a sub-committee of the executive, comprising several District Surveyors (Messrs. H. H. Collins, E. Marsland, and F. Hammond) with Mr. Frederick Farrow, Mr. Max Clarke, and Mr. Charles Goad.

The numerous visitors were received by Mr. Sachs, the Chairman of the Executive.

ARCHITECTURAL SOCIETIES.

The Edinburgh Architectural Society.—This Society opened on the 11th inst., when the annual business meeting took place. The following officials were elected:—President, Mr. Alfred Greig; Vice-President, Mr. Percy E. Nobbs, M.A.; Librarian, Mr. John T. Matthew; Treasurer, Mr. A. Hay Lamont; and the Hon. Secs., Mr. A. Muir, Mr. Colin Cownie.

Sheffield Society of Architects and Surveyors.—The annual dinner of the Sheffield Society of Architects and Surveyors was held at the Masonic Hall on the 10th inst. Mr. Joseph Smith, President of the Society, presided, and was supported by the Lord Mayor of Sheffield (Alderman W. E. Clegg), the Master Cutler (Mr. R. A. Hadfield), the Town Clerk (Mr. H. Sayer), the Medical Officer of Health (Dr. Robertson), the City Surveyor (Mr. C. F. Wike), the Chief Constable (Commander Scott), Mr. W. Emerson (President of the Royal Institute of British Architects), Mr. W. C. Fenton (Hon. Secretary), &c. The loyal toast and "The Lord Mayor and Corporation" having been honoured, Mr. C. Hadfield proposed "The Royal Institute of British Architects." He spoke in very commendatory terms of the work which the Institute is doing for architecture and architects in this country. Mr. W. Emerson, President of the Institute, responded. He said the age of the Institute was just as long as the Queen's reign. By alliance with the principal provincial societies, the Institute had become practically a national body. In 1837 there were 56 London Fellows of the Institute and only 9 provincial Fellows; whilst in 1889 there were 259 London Fellows and 169 provincial Fellows. He did not think they could measure exactly the influence which the Institute had exercised on design.—Mr. E. Holmes proposed "The Surveyors' Institution," and Mr. Fred Fowler responded. Mr. E. M. Gibbs submitted "The City and Trade of Sheffield." Whilst rejoicing in the progress of Sheffield, he remarked that it did not do to always compare themselves with what they used to be; they should also compare themselves with other towns, and they would find that they were behindhand in many things—in architecture, for instance. The Master Cutler responded to the toast. The toast of "The Visitors" and also "The Sheffield Society of Architects and Surveyors" was subsequently honoured.

Birmingham Architectural Association.—The annual conversazione of the Birmingham Architectural Association was held in the rooms of the Royal Society of Artists, New-street, on Friday evening last week. There was an exhibition of architectural drawings. Members and guests, numbering about 100, were received by the President (Mr. W. H. Bidlake).

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Hammersmith Vestry 6,150*l.* for public improvements; St. George, Hanover-square, Vestry, 10,000*l.* for wood-paving works, &c.; St. George-the-Martyr, Southwark, Vestry, 12,440*l.* for paving works; St. Luke's, Middlesex, Vestry, 4,000*l.* for additional cost of dust destructor; St. Pancras Vestry, 23,800*l.* for wood-paving and sanitary conveniences; the Whitechapel District Board, 10,000*l.* for electric lighting purposes; the School Board, 200,000*l.* for schools, &c.; and the Strand District Board, 3,800*l.* for sanitary convenience.

Electric Tramway Traction.—The Highways Committee recommended that the Council should enter into an agreement with Professor Kennedy that he should act as engineer in charge of the construction or reconstruction of the Council's tramways or light railways for electrical traction.

Mr. Gilbert complained that the terms proposed to be made with the professor were extravagant. They would mean the payment of 30,000*l.* in commission.

Mr. Benn, chairman of the committee, said the adaptation of the existing or proposed new lines to electric traction was no light undertaking. The whole of the work contemplated, if carried out, would mean the expenditure of several millions, and it was essential to obtain the very best advice and assistance.

After a short discussion the recommendation was adopted.

Proposed Light Railways.—The Council then constituted itself a special meeting for the purpose of making an application under the Light Railways Act to construct certain light railways.

The resolutions recommended by the Highways Committee ran as follows:—

(*a*) That the Council do make application, under the Light Railways Act, 1896, to the Light Railway Commissioners for an order to authorise the construction by the Council, for electrical traction, of the under-mentioned light railways, namely:—

(*a*) From the present tramway terminus near the Archway Tavern, Archway-road, to the county boundary.

(*b*) No. 1—from the present tramways at Clapham Common south side, viâ Clapham Common, Battersea-rise, Wandsworth Common north side, and East-hill, to West-hill; and No. 2—from West-hill, viâ Kingston-lane, to the county boundary.

(*d*) No. 1.—From the present tramways at Deptford, viâ Blackheath Hill and road and Shooter's Hill-road to the Herbert Hospital. No. 2.—From the Herbert Hospital, viâ Woolwich Common-road, the road to the west of St. George's (Garrison) Church, into New-road, and thence along Thomas-street and Green's-end to and along three sides of Beresford-square, Woolwich, and returning along New-road, Mill-lane, and Woolwich Common-road to the Herbert Hospital.

(*e*) From the present tramways at New-cross-road, *viâ* Lewisham High-road, Loampit hill and vale, Lee High-road and Eltham-road, to a point near Wellhall-lane at Eltham.

(*b*) That the Highways Committee be authorised to take all the necessary measures, including the issue of advertisements, the service of notices, and the preparation and deposit of the applications, plans, estimates, &c., to give effect to the above resolution.

Mr. T. W. Williams moved, and Sir H. Poland seconded, to refer the report back, but the motion was defeated, and the recommendations of the Committee were agreed to.

Theatres, Music Halls, &c.—The Theatres and Music Halls Committee recommended

That Messrs. Wimperis and Arber be informed that the Council has no objection to the execution of works in connexion with the Canterbury Music Hall.

That Mr. W. E. Davis be informed that the Council has no objection to the provision of Bostwick gates in connexion with the Claylands Sunday schools.

That Mr. W. G. R. Sprague be informed that the Council has no objection to the arrangements shown on the plans, dated August 19, 1899, submitted by him in connexion with the Duchess Theatre.

That Messrs. Peake, Bird, Collins, & Co. be informed that the Council has no objection to the arrangements shown on the ten plans submitted by them in regard to the Hotel Russell.

That Mr. Y. Bolton be informed that, provided the works shown on the two plans, dated August 15, 1899, submitted by him in regard to a building to be known as St. Catherine's Hall, and to be erected at Telegraph Hill, Hatcham, be commenced within six months, the Council will be prepared to grant a certificate under Section 12 of 41 and 42 Vict. cap. 32, to the owner of such building.

That Mr. R. W. Hobden be informed that the Council will be prepared to grant a certification under section 12 of 41 and 42 Vic., cap. 32, to the owner of the St. Thomas Parish-room on being satisfied that certain conditions have been complied with.

That Mr. C. Manzel be informed that the Council has no objection to the carrying out of the alterations shown on the two plans, dated September 19, 1899, submitted by him in regard to the Gambrinus Restaurant.

That Messrs. Eedle and Meyers be informed that the Council has no objection to the arrangements shown on the two plans, dated September 22, 1896, submitted by them in connexion with the Horns Assembly Rooms.

That Mr. W. G. Hunt be informed that the Council has no objection to the construction of the passage-way shown on the plan dated August 9, 1899, submitted by him in regard to the Kensington Town Hall.

That Messrs. Gordon, Lowther, & Gunton be informed that the Council has no objection to the erection of the buildings shown on the five plans, dated August 11, 1899, submitted by them in connexion with Madame Tussaud's.

That Mr. F. Matcham be informed that the Council has no objection to the arrangements shown on the plan, dated September 23, 1899, submitted by him in connexion with the New Cross Empire Theatre of Varieties.

That Mr. Matcham be informed that the Council's approval of the drawings in regard to a theatre which it was proposed to erect in Shaftesbury-avenue, Archer-street and Rupert-street, has lapsed.

That Mr. F. A. Walters be informed that the Council has no objection to the arrangements shown on the plan, dated September 23, 1899, submitted by him in connexion with the St. George's Hall and Club.

That Mr. A. B. Jackson be informed that the Council has no objection to the arrangements shown on the plan, dated September 28, 1899, submitted by him in connexion with St. James's Theatre.

That Messrs. Wylson and Long be informed that the Council has no objection to the arrangements shown on the plan, dated October 2, 1899, submitted by them in connexion with the South London Music Hall.

That Mr. W. G. R. Sprague be informed that the Council has no objection to the erection of the building shown on the plan, dated September 22, 1899, submitted by him in connexion with Terriss Theatre.

That Mr. J. P. Briggs be informed that the Council has no objection to the arrangement shown on the plan, dated August 9, 1899, submitted by him in connexion with the Tivoli Music Hall.

That Mr. F. Matcham be informed that the Council has no objection to the arrangements shown on the plan, dated August 16, 1899, submitted by him in connexion with the London Hippodrome.

That Mr. E. S. Barnes be informed that the Council has no objection to the arrangements shown on the plan, dated September 23, 1899, submitted by him in connexion with the London Music Hall.

The recommendations were granted under certain conditions.

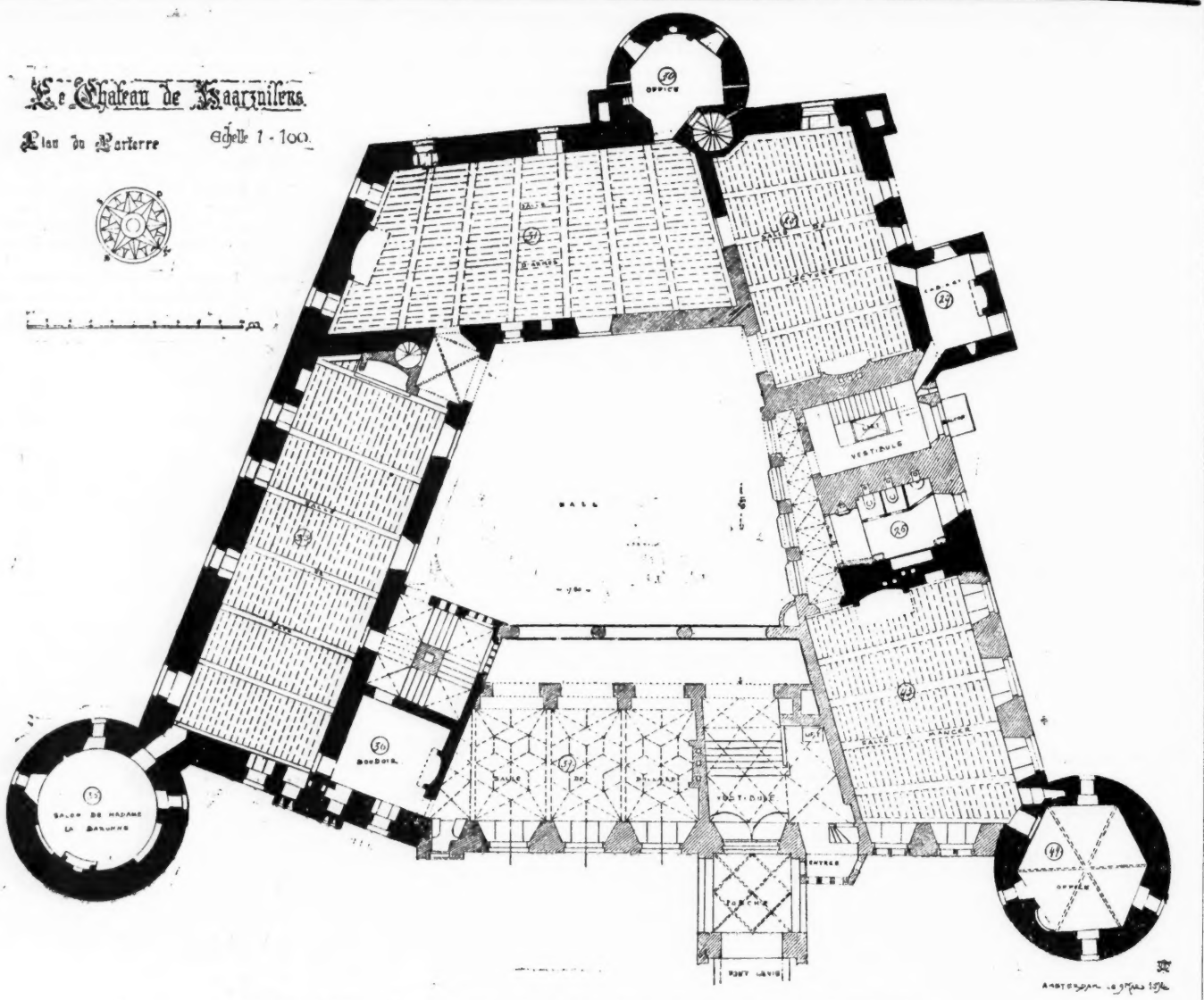
Horton Asylum.—The Asylums Committee reported that they have entered into a contract with Messrs. G. N. Haden & Sons for the heating and ventilation of this asylum, the contract price being 24,560*l.*

Heath Asylum, Bexley.—The same Committee reported as follows:—"We have to report for the information of the Council that the Secretary of State has approved the plans of the farm buildings proposed to be erected at this asylum, for which an expenditure of 7,500*l.* has been voted by the Council, and that tenders will be invited for the work. We have also to report that we have accepted the following tenders in connexion with this asylum, viz.:—Shand, Mason, & Co., fire hose and fittings, 320*l.* 2*s.* 3*d.*; J. H. Porter & Sons, water softening plant, 1,095*l.*"

Drainage Work, Parkhurst-road.—The Corporate Property Committee recommended, and it was agreed, "That the acceptance of Messrs. Harding & Son's tender of £222 for the reconstruction of the drains at No. 71-79 (odd numbers), Parkhurst-road, be approved, and that the additional expenditure of £22 be sanctioned."

The Council adjourned soon after seven o'clock.

Artisans' Dwellings, Burton.—Mr. Henry Edwards has obtained the contract for the second block of houses to be erected by the Burton Artisans' Dwellings Company. The first block is nearing completion, and the formation of the street will shortly be proceeded with. The plans were repared by Mr. T. Jenkins, architect.



The Castle of Haarzuylens, Holland.—Plan of Ground Floor as restored.

Illustrations.

THE "CHÂTEAU D'EAU": PARIS EXHIBITION.

THE illustration of this remarkable conception, designed by M. Paulin, architect, is taken from the model or *maquette*, as the French call it, in which form all the principal structures for the Paris Exhibition have been worked out before actual execution.

The "Château d'Eau" is to form a feature in front of the Palais de l'Électricité. It is designed in a colossal Louis XV. style, and will be a very interesting specimen of decorative architecture. The model gives a very good idea of the future building, which will be coloured in a light tone, and clearly detach its silhouette in the daytime from the Château d'Électricité behind it, and in the nighttime by means of brilliantly coloured waves of illuminated water. Experiments are now being made with a chemical composition, a small quantity of which melted in water colours an immense mass of the liquid with a reddish tone, giving bright emerald flashes and reflections. This cascade of red and green will pour out from the opening in the central arch above the steps of the cascade, and it is expected will produce an even more startling effect than the celebrated luminous fountains of the Exhibition of 1889.

M. Paulin, the designer, was a pupil of the École des Beaux Arts, and carried off the Prix de Rome in 1875 and the Medal of Honour at the Salon in 1882.

THE CASTLE OF HAARZUYLENS, HOLLAND.

WE give a view of this castle, near Utrecht, which has been restored under the direction of Dr. Cuypers, the eminent architect, of Amsterdam, to whom the gold medal of the Royal Institute of British Architects was presented in 1897.

Until the year 1892 Haarzuylens was only known for the extensive ruins of the old feudal castle founded in the fourteenth and fifteenth centuries by the family of the Zuylens, who have always retained it in their possession. It was abandoned, however, as a residence in the middle of the last century, and fell into a state of ruin. None of the original wood, glass, or iron remained in the structure, but the brick construction of walls, staircases, vaults, towers, and chimneys remained pretty nearly intact.

It was proved, however, that the general plan, twice enlarged since the foundation of the castle, beginning from the south-west (room 28 on plan) by the addition of two large halls (31 and 33), and the chief staircase, had never been completed along the front from room 36 to the northern tower (44), except the foundation walls, which still existed. This tower (44) had only two floors, while the others have six stories, each vaulted in brick.

The gables of the end walls remained *in situ*, and it was easy, from the traces of where the timbers bore upon the walls, to reconstruct the roofs and floors much as they originally existed; there were also many drawings of the castle in existence, taken before it fell into ruin.

The irregularity of the plan must have arisen from practical considerations or special conditions of the site, as all the important castles of the same period in Holland are built on a perfectly regular oblong plan.

The present Baron de Zuylen has repaired and restored the castle as a country residence for a portion of the year.

The wooden projecting gallery running round a great portion of the walls was one of the most striking features of the ancient castle, and has been restored, as shown in the perspective view. The great hall in the middle of the plan was formerly an open space, but is now covered in by a wooden roof, to afford more comfort and more convenient internal communication between the various portions of the building.

Old and new pieces of furniture, tapestry and brass-work are being collected to fit up the interior, preserving always its mediæval character, the details of mediæval craftsmanship having been a special study with Dr. Cuypers for many years back; and he has aimed at showing how well mediæval forms of furniture and fittings can be made to subserve the purposes of a modern luxurious dwelling.

It is intended that ultimately visitors should be admitted to view the castle twice a week.

The foundations of the gate-house were discovered some time after the restoration had been commenced. One old drawing has been found, indicating the general form of this gate-house. It was intended that this building, as rebuilt, should afford space for the service of heating and water-supply, and dwellings for men-servants, porter, and engineer. This portion of the work was entrusted to Mr. Joseph T. I. Cuypers, under the supervision of Dr. Cuypers, and he went for the character of the details to the period between 1480 and 1515, during which time the Zuylen family enjoyed a great deal of power and influence in Utrecht and the neighbourhood. The style is therefore later, and less ponderous in this portion of the restoration, suggesting the change of the mediæval dwelling from a fortress to a small residence.

The perspective is taken from a point of view due westward of one angle of the castle, the foreground front with the round tower in the centre being that which forms the upper margin of the plan as given here. From this point of view all the walls seen are the ancient work, the woodwork and roof alone being modern.

The foregoing description has been written out from notes furnished to us by Mr. Joseph Cuypers.

The perspective view is from a drawing by Mr. Jacques van Straaten, and the sketches of the two angle turrets of the modern gatehouse are by Mr. Jan Struyt.

Castle of Haarzuylens.—Two Angles of the Modern Gate-House.

HOUSE, BURLEY-IN-WHARFEDALE.

This house stands on a plateau not far from the moorlands in the west of Wharfedale. It is built of coursed rubble stone from the local quarries. The roof is covered with stone slabs.

The work generally was done by Messrs. Murgatroyd, and the garden was made by Mr. Horsman, of Bradford.

Ernest Newton.

CONGREGATIONAL CHURCH, HARLESDEN.

The plan of this church is that of the "parallelogram" type of church building, and one which suits this site.

This plan, besides being so good for seeing and hearing, is also more economical in cost than any other form of church.

Accommodation is provided on the ground floor for 600 worshippers, and the galleries will accommodate 200 persons, making a total of 800 seats in this church.

Ample means of egress has been provided, there being four distinct entrances and spacious lobbies on the ground floor, and additional and separate entrances are provided for the galleries.

The floor of the church will be formed of solid wood blocks laid on cement, and all the internal woodwork will be in pitch-pine.

The lecture-hall will accommodate 400 persons.

The two vestries provided for the church will be equally available for use as retiring-rooms for artistes when the hall is used for public entertainments.

The buildings will be warmed and ventilated.

The style of architecture adopted is Late Gothic, and the external walls will be faced with red bricks, and the ornamental dressings will be of stone. The internal walls will be plastered and distempered. The windows will be filled in with cathedral tinted lead-lights.

The roofs will be boarded and covered with green slates.

The contract has been taken by Messrs. Gregory & Co., builders, at 8,660*l*.

This design was submitted in competition by the late firm of Spalding & Cross, and the working drawings have been prepared by Messrs. Spalding & Spalding (the senior partner in the old firm and his son) under whose supervision the work will be carried out.

A HALL INTERIOR.

The drawing shows in elevation the fireplace end of an inner hall, or living-room, of a country house.

Through the archway on the right is an ante-room, fitted with seats, looking over the garden, and at a higher floor-level than the hall itself. In the centre is an ingle-nook, deeply recessed, with seats at each side of the stone fireplace. On the left is an archway leading to the main staircase, &c.

There is a high dado round the hall, of wainscot, the walls above being plastered and coloured green.

The ceiling and arches are of oak, and the flooring is of polished oak laid in narrow planks.

The design is by Mr. G. O. Scorer, and was exhibited at the last Royal Academy.

DESIGN FOR A CHIMNEY-PIECE.

This chimney-piece is intended for a dining-room, panelled simply on all sides, with a side-board fitting similar in character to the chimney-piece, on the side facing the window. The grate is cast-iron, having a matt surface of dull gold with three brightly gilded ornaments above the opening. The panels are painted and gilded tapestry; the electric lights hang from simple copper supports and are of gilded copper with blue enamel inset.

The oak on either side is canted nearly to the level of the mantelshelf, and again immediately above the painted panels, where is introduced a plain band of copper, allowed to assume a rich variety of reds before being lacquered. The low relief leaf-work carved at the sides is repeated on the other side of the angle. The frieze above is stencilled in two shades of grey on green.

The design is by Mr. G. M. Ellwood, and the original water-colour drawing, showing the effect in colour, was exhibited at the last Royal Academy.

FOUNTAIN AND CLOCK TURRET, ST. CLEMENT'S, OXFORD.

This structure is placed upon what is known as the "Plain," close to Magdalen Bridge, at Oxford, and is the gift of Mr. G. H. Morrell, M.P. to the city, in commemoration of the Jubilee of 1897.

It is octagonal in plan, the drinking fountain itself being square, with a rounded basin on each face. The columns and dwarf walls are of Milton stone, the fountain steps and horse-troughs of Portland, the basins lined with copper. The roof is ceiled with oak boards, and covered with Naunton stone tiles.

The bronze taps were carefully modelled by Mr. L. A. Turner; the weather-vane is by Mr. F. Chibb, of Hampstead; and the clock by Messrs. Payne & Son, of Oxford; the builders are Messrs. Barfield & Loxley, of Oxford.

The neck of the turret, below the clock, bears the motto, "Lympha Cadit, Ruit Hora, Sagax Bibe, Carpe Fugacem," contributed by the President of Magdalen College, and executed in lead in raised and gilded characters.

The fountain was inaugurated by the Princess Louise on May 25 last.

DESIGN FOR A FONT.

This design, by Mr. Frank Knott, was exhibited at the last Royal Academy.

The font itself is to be of stone; the cover of wood stained blue, with beaten and enamelled steel decoration, and surmounted by a bronze figure.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Lines of Frontage.

Islington, East.—That, at the request of Messrs. G. E. Todd & Company, permission be given to Mr. J. Hayward to retain a projection (an illuminated sign) at the "Old Pied Bull" public-house, No. 188, Holloway-road, Islington, extending beyond the general line of buildings in that street, on condition that he do remove such sign at the expiration of two years from October 17, 1899.—Agreed.

Strand.—Two iron and glass shelters in front of Mr. Wyndham's new theatre, Charing Cross-road, St. Martin-in-the-Fields (Mr. W. G. R. Sprague).—Consent.

Width of Way.

Camberwell, North.—That the request of Mrs. A. E. Bennett for permission to retain the forecourt fence in front of eight houses on the north side of Beckett-street, Camberwell, at less than the prescribed distance from the centre of that street, be acceded to.—Agreed.

Cubical Extent.

Southwark, West.—That, subject to the provisions of Section 76 of the London Building Act, 1894, the consent of the Council be given to the erection of an addition to a factory on the west side of Harrow-street, St. George-the-Martyr, Southwark, such factory and addition together to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of railway road-van builders (Messrs. Hazeldine Brothers).—Agreed.

Means of Escape from Top of High Buildings.

Strand.—That Messrs. White & Co. be informed that the Council, in the exercise of its powers under Section 63 of the London Building Act, 1894, is not prepared to grant a certificate in respect of the means of escape in case of fire to be provided for the persons dwelling or employed on the fifth and sixth floors of Donington-house, Norfolk-street, Strand.—Agreed.

Deviation from Certified Plans.

Chelsea.—Certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "King's Arms" public-house, No. 51, Sloane-square, Chelsea, at the corner of a roadway leading to Eaton-square (Messrs. J. K. Cole and K. Wood for Mr. J. King).—Consent.

Dwelling-houses on Low-lying Land.

Woolwich.—That the solicitor do prepare a licence under Section 122 of the London Building Act, 1894, to Mr. A. J. Glock, for the erection of sixteen dwelling-houses on low-lying land in Bannockburn-road, Plumstead.—Agreed.

BOOKS RECEIVED.

The Romance of Our Ancient Churches. By S. Wilson. (Archibald Constable & Co.)

Electric Wiring, Fittings, Switches, and Lamps. By W. Perren Maycock. (Whittaker & Co.)

Heat: For Advanced Students. By Edwin Edser. (Macmillan & Co.)

Correspondence.

***To the Editor of* THE BUILDER.**

BELL HANGING IN TOWERS.

Sir,—More than thirty years ago a lecture was given before the Architectural Association by the late Benjamin Ferrey, F.S.A., an architect of very great experience and prudence, at which I was present. *Inter alia*, the vexed question of the proper method of hanging church bells was gone fully into, the lecturer's opinion being strongly in favour of the avoidance of *all* contact between the bell-carriage and the tower walls. To him and his skill and care we owe the present condition of that grand tower of St. Mary Magdalene, Taunton (which was taken down and rebuilt at a large cost), so dear to "the men of the west."

My sole object in writing this letter is to invite opinions on a most important question connected with Church architecture, and alluded to in your issues of October 7 and 14. Though I am well aware from my own experience that some bell-founders unhesitatingly recommend the building *into* the walls of the timbers which carry the bells, I should be glad if it could be supported, or otherwise, by men of scientific ability (not connected with that honourable craft, the members of which, as is but natural, think more of bells than of towers), so that this matter might, once for all, be cleared up. Both methods can hardly be right.

I can well believe that steel, if not injurious from a musical point of view, would be cleaner and more readily kept in good repair and condition than oak, the trenails of which are so liable to leave their moorings after perpetual shocks. In either case some soft material, like indiarubber, could be used to keep the framing from all friction with walls, in the same manner as the "fender" prevents damage from contact with stone dock walls when a large ship is hove to.

Great pains are taken to keep out rain from belfry stages, and things would improve if equal trouble were taken to keep out birds and bats, which, though picturesque in their evolutions on the outside, cause great damage to the timbers in belfries.

E. Swinfen Harris.

RED ANTS IN HOUSES.

Sir,—At the present season many of the houses in London, which are built on a sandy soil, have the basements infested with swarms of small red ants. Everything that is brought to table is covered with them to such an extent that a positive nuisance results. Can you or any of your correspondents suggest any method of exterminating them, or greatly reducing their numbers?

Rowland Plumbe.

The Student's Column.

ROADS: THEIR CONSTRUCTION AND MAINTENANCE.

PART III.—CONSTRUCTION (*continued*).

17.—DRAINAGE.

When the road-bed has been excavated to the required dimensions and contour, there still remain some important details to be attended to before the coating of metal is laid down. In the first place the bed must be rendered as hard and compact as possible by rolling it well with a heavy roller, of 15 tons weight, all depressions being carefully filled up, and the whole rolled again until quite firm. The process of rolling will usually cause a certain amount of flattening of the crown of the road-bed, for which reason it should at first be made with a greater convexity than is finally required, in order that when rolled it may have the desired curvature. The amount of curvature which the bed should have has already been discussed, the convexity being limited to the smallest possible amount necessary to secure surface drainage. Where the road has a natural gradient the necessity for any marked convexity does not exist; but a perfectly level road will naturally require a certain amount of camber to enable surface water to escape into the gutters or ditches. It may be necessary, therefore, to vary the convexity of the bed to suit the requirements of changes in the gradient.

At this stage, also, it is advisable to consider the question of under-drainage, which is sometimes of more importance than even the drainage of the upper surface of the road. The necessity for sub-drainage depends to a large extent upon the nature of the subsoil upon which the road bed rests, and also upon its relation to the natural drainage of the surrounding country. Sandy subsoils, being porous, offer but slight resistance to the free percolation of water, and, as a general rule, do not present any great difficulty in the way of drainage, especially if the natural drainage falls away from the line of the road. Sands, also, unless saturated with water, and in the condition of what are called "running sands," are not so much affected as regards stability by the presence of moisture. Damp sand, in fact, is more capable of resisting the pressure of heavy loads than when quite dry. It is, however, quite otherwise with clay soils, which are naturally retentive of moisture. Although they are not readily saturated, when that state is reached they become most unstable, and quite incapable of supporting heavy pressures. The access of water to a clay subsoil tends to convert it superficially into a semi-fluid mass of soft mud, which is not a desirable foundation for a road to rest upon. The impermeability of clays, however, facilitates the removal of water by proper drainage before it has time to soak into and soften the substratal portions of the road. The worst kind of subsoil to deal with is silt, which, while nearly as retentive as clay, is at the same time very absorptive.

When, therefore, the road-bed consists of any substance which is liable to become sodden with water, steps must be taken to remove the water by efficient drainage. Much trouble has been caused by want of attention to this important detail. A wet substratum cannot give a firm, unyielding foundation, and will invariably destroy the efficiency of the road under the pressure of heavy traffic. The action of the water will be twofold. The natural cohesion of the road-bed will be mechanically weakened, and the chemical disintegration of the road metal will be hastened. The presence of imprisoned moisture in the road foundations is also a grave source of danger during winter frosts, and may lead to the complete disintegration of the road itself by the expansive force exerted by water on freezing. This effect is reduced to a minimum if the road-bed is kept dry.

The necessity for sub-drainage will arise chiefly in those places where the roadway intercepts the natural drainage of the country, in which case even the most permeable subsoils may be continually wet. Surface water should not percolate a well-constructed road to any serious extent; and, even if it does, if the road is constructed on the Telford principle, there is already a very efficient sub-drainage provided by the substratal pavement. Even the common type of macadamised country road, if well compacted and with proper surface drainage, should afford very little interstitial space for the percolation of water to the lower portions.

Where the subsoil is naturally wet, access of water to the road bed should be prevented by drains placed in a favourable position to intercept the underground circulation of water. In the consideration of this point three cases will, in general, present themselves. In the first case, the only way to keep the road-bed dry is to place a longitudinal drain on each side of the roadway, as in fig. 1. This will be necessary when there is no well-defined flow of water from either side. In the second case, where there is a regular flow from one side of the roadway to the other, as frequently occurs in contour roads on a side slope, it may be sufficient to place a single longitudinal drain on the side from which the water comes, as in fig. 2. Lastly, the subsoil may be of so retentive and wet a nature as to necessitate a system of drains under the road-bed itself, which may be accomplished in several ways.

The simplest plan is to run a central drain under the middle of the road-bed, as in fig. 3, connecting it at suitable intervals with the side ditches by means of cross drains. In other

Fig. 1. Double Marginal Drain.

Fig. 2. Single Marginal Drain.

Fig. 3. Central Drain.

Fig. 4. Blind Drain.

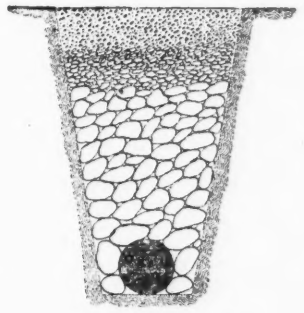


Fig. 5. Tile Drain.

Fig. 6. Box Drain, Square.

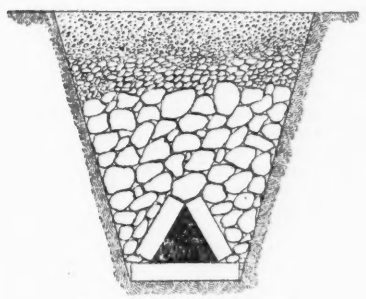


Fig. 7. Box Drain, Triangular.

Illustrations to Student's Column.

cases it may be more desirable to cut transverse drains across the roadway, at a distance apart depending upon the degree of wetness of the subsoil. In extreme cases they may be at intervals of 20 ft., but this distance may be increased considerably in drier ground. The effectiveness of such a system of drains depends chiefly upon the facilities with which the subsoil yields its water. Thus in sandy or gravelly beds the influence of a drain may extend to a distance of 12 yds. or more; while in more retentive rocks this influence will not extend to as many feet. The reason for this is clear, for the freer the percolation the more nearly will the entangled moisture behave like a free surface of water, and the more readily will it find its way to the level of the drain. It is generally held that for the most efficient drainage the following distances should be preserved between the drains in subsoils of various kinds :—

Porous subsoils (sand or gravel)... 30-40 ft.
Medium subsoils ..... 20-30 ft.
Heavy retentive clays ..... 12-20 ft.

No fixed rule can, however, be laid down. The nature of the soil must be carefully considered at every point where drainage is necessary, and dealt with according to the circumstances of the case.

Where the road is level these transverse drains may be made to run straight across, at right angles to the axis of the road, and, of course, they must be constructed so as to discharge into the side ditches. For this purpose they must have a fall from the centre of the road bed. Where, however, the road has a steep gradient it is better to make the transverse drains V-shaped, with a very flat vertical angle, the apex being in the middle of the roadway and the limbs running in the direction of the fall. The vertical angle is so regulated that the bottom of the drain has only the small fall necessary to carry off the water. These drains are sometimes called *cross mitre* drains.

It is not necessary that properly constructed drains should have a greater fall than 1 in 100, as the tendency to silt up will be obviated by the special methods adopted to prevent any infiltration of earth, which will be presently described. The fall will, of course, depend somewhat upon the size of the drain and the amount of water it is required to carry off; but in any case too rapid a fall is to be avoided, owing to the danger of displacing and choking the drains by a swift current of water.

Where the road is in embankment care must be taken to prevent water from running down the face of the slope, which would in this way be soon worn into gullies. Underdrains are seldom necessary in embankments unless the foundation is particularly wet and swampy. The surface water is conducted from the side channels of the roadway by occasional culverts into the nearest water-courses.

In cuttings, the open ditch at the foot of the slope is liable to silt up from rain wash carried down from the face of the excavation. It is therefore preferable in such cases to substitute covered drains, of a type similar to those about to be described, instead of open gutters. Of course, these side drains must be ultimately discharged into natural watercourses, which may be accomplished by culverts running under the road bed at suitable points. It is also advisable, in addition to the above-mentioned drain at the foot of the slope, to prevent the side of the cutting from being gullied by surface-water running down from the higher ground above. This is effected by what are termed *catch-water drains*, made on the upper side of the cutting, at a distance of at least 6 ft. from the edge of the excavation, as shown in the hill-side road section given in the preceding chapter. These may be connected at intervals, obliquely along the face of the cutting, with the culverts which carry off the water from the road gutter.

Springs are not infrequently tapped in excavating cuttings, and these become a source of constant danger to the stability of the slopes. In such cases the slope should be further excavated at the point where the wetness appears, until, if possible, the source of the water is reached. This may often be determined by a careful inspection of the nature of the rocks in the cutting, as springs usually have a well defined geological origin, marking either the junction of permeable and impermeable strata, or else lines of fault or fracture in the rock. When the source has been reached, an outlet is provided for the water by drains constructed of brushwood laid in a trench and covered up with sods placed upside down. The trench is then filled in again and well rammed. In this way the water from the spring may be conducted into the roadside drain without injuring the face of the cutting. Instead of brushwood or fascine drains broken stone or blind drains, as described later, may be used if preferred. Sometimes, however, it may be impossible to trace the moisture to a single source, the whole face of the cutting being saturated for some distance. The treatment in such cases may involve considerable difficulty. A series of broken stone drains may be run up the sides of the slope at short intervals, like inclined retaining walls, and supported by buttresses projecting into the slope. The front face of the drains is covered with inverted sods, and the face of the cutting is made good with earth well compacted. Such drains must be carried high enough to carry off all moisture which appears on the face of the cutting, and they must be sunk well below the road level to ensure a secure footing. In other cases it may be considered preferable to construct a broken stone drain parallel to the axis of the road, on the top surface, above the slope of the cutting, and at a depth sufficient to intercept the source of the water, and divert it from the face of the slope.

Such are some of the more commonly occurring cases in which systematic subdrainage may be necessary. It may be useful now to illustrate some types of drains which may be employed for road purposes. Of course open ditches are in themselves drains, and if made of sufficient depth and kept clean and free from vegetable growth, they may render unnecessary any other form of underdrainage, unless the subsoil is of an exceptionally moist and retentive nature. Of covered drains the simplest and cheapest form is that known as a *blind* drain, which consists simply of a trench excavated to the required depth and shape and filled in with large *rounded* pebbles, as shown in fig. 4. To prevent earth from washing in and choking the spaces between the pebbles the top should be covered first with a layer of smaller stones, and then with a layer of coarse gravel, by which means the water is filtered before passing into the porous mass beneath. Angular stones would not be so suitable for the purpose as pebbles, since the interstitial space would be thus reduced. The filtration is sometimes effected by a layer of straw or inverted sods, but these are not so permanently efficient as the above. For general use the ordinary agricultural tile drain is convenient. These are set in the bottom of the trench, with open joints to facilitate the entrance of the water, and are held in place by stones wedged around them as in fig. 5. The trench is then filled in in the same manner as in the blind drains, in order to protect them from being choked by silt. In some localities where thin bedded, flat stones are easily obtained, the tile drains may be further protected from earth wash by covering them with the flat stones in the form of a roof. The drains may present difficulties at the outfall, where they discharge into open ditches, both from the ease with which they disintegrate from the action of frost when saturated with moisture, as well as from becoming choked from various causes. All drains with open joints are liable

to be choked by the roots of trees, more especially the willow, ash, poplar, and elder, a point to be borne in mind in planting hedge-rows. As the choking or perishing of such drains involves considerable expense in taking up the road before they can be repaired, care should be taken to select only well-made and durable tile drains, which should not be of too porous a nature. If the older form, or U-shaped tile drain is used, it should be placed with the opening downwards upon a flat sole, placed so as to break joint with the tiles.

In localities where stone is plentiful and cheap, box drains may be constructed, as in figs. 6, 7, of rough slabs arranged either in square or triangular form. Drains of this kind were at one time extensively used. Of the two types shown in the diagrams, the triangular form has the advantage of being more economical of material, and at the same time equally efficient as a waterway. The edges of the stone being rough and untrimmed, it is still more important to exclude any influx of silt from drains of this kind.

The old-fashioned methods of draining heavy clay land by *wedge* or *shoulder* drains are obviously unsuitable for under-draining road beds, as they would speedily collapse under the pressure of traffic.

When footpaths are to be made along the side of the road a channel or watercourse is necessary between the road and the path. The mode of construction of this channel will be described later. At present it is only necessary to call attention to the necessity in such circumstances for running drains under the footpaths to collect the water from the channel and deliver it into the ditch, since provision must be made for these drains during the construction of the road-bed, and before the coating of metal is spread. This would not, of course, apply to many street footpaths, nor to other cases in which the drainage is disposed of, without passing beneath the foot-path, by means of gullies and sewers.

Culverts.—Wherever natural drainage channels touch or intersect the line of the roadway culverts will generally be necessary for the disposal of the water. These will also be required in many cases to carry off the water collected in the drains, wherever the latter are inadequate to dispose of the quantity of water which has to be dealt with. The free use of culverts has been restricted owing to their expense, and many roads have suffered in consequence. Pipe-culverts, however, are cheaply constructed, and are very efficient, except where the quantity of water is unusually large, in which case box or arch-culverts must be employed. Pipe-culverts may be made either of glazed sewer-pipe or of iron water-pipe. They should be carefully laid, so that the pipe is well supported below, and the joints are made watertight, to prevent any escape which would tend to undermine the bedding and cause settlement and fracture. Sinking and displacement of pipes may become a serious difficulty when dealing with saturated peat soils or running sands, the best remedy being to provide a foundation of wooden planks for the pipes to rest upon. In road making it is better to avoid altogether such treacherous subsoils, as roads constructed upon a foundation of this kind will be certain to lead to endless trouble and expense.

The outfall of pipe culverts should be set in masonry, to protect the face of the embankment from wash.

The size of the culvert will depend upon the quantity of water to be dealt with, which must be carefully estimated, and is usually a very variable quantity in different localities and at different seasons of the year. Formulæ have been given for rough approximations to the size required for culverts, such, for example, as Proft. Talbot's formula.

Area of cross section in feet

$$= C \sqrt[4]{(\text{drainage area in acres})^3},$$

where C is a variable coëfficient depending upon local conditions. Of more practical value, however, will be found the following table showing the average discharge of pipes in cubic feet per minute.

Diameter of pipe.	Fall, 1 in 100.	Fall, 1 in 50.
1 in.	·47	·66
2 „	2·67	3·77
2½ „	4·67	6·60
3 „	7·35	10·39
4 „	15·10	21·22
5 „	26·39	37·32
6 „	41·65	58·80

In all cases it must be remembered that there is an advantage in using the smallest pipes consistent with efficiency, not only on account of their smaller cost, but also of the saving of labour in laying them.

The consideration of arched culverts, which are, in fact, bridges, falls outside the scope of the present article.

GENERAL BUILDING NEWS.

The Terriss Theatre, Rotherhithe.—This new theatre, which was opened on Monday, has been erected on the Lower-road, Rotherhithe. The building, which has accommodation for about 3,000 persons, is clear on three sides. The principal entrance, from the Lower-road, leads to the lobby, the grand crush room, lounge, and balcony dress-circle. There are an early and general entrance to the orchestra stalls, dress-circle, pit, and gallery; and the early doors can be used as emergency exits. The auditorium is about 65 ft. square, with a stage about 68 ft. wide and 35 ft. deep, separated from the auditorium by a double asbestos fireproof curtain. The dressing-rooms are numerous and are provided with the best sanitary arrangements. On the balcony level are eleven rows of seats, and on the gallery level there are fifteen. From all parts of the house an uninterrupted view can be had of the stage. Refreshment saloons have been provided for the various sections of the house, and on the pit and balcony levels are private boxes. The front to the Lower-road is of red brick and stone, of Classic design. The interior decorations are carried out in Louis XV. style, the prevailing tints of the decorations being cream and gold, with draperies of ruby and gold. Electricity is used for lighting throughout, with gas in reserve in the event of failure of electricity supply. The building has been carried out under the supervision of Mr. W. G. R. Sprague, the architect, by Mr. Walter Wallis, of Balham. The decorations and furnishing are by Messrs. Waring. Messrs. Strode have carried out the electrical, gas, and heating installations, and Messrs. Merryweather the hydrants and fire-curtain. The stage work throughout is by Mr. J. C. Cawdrey, and the electric fittings by Messrs. Alfred Slater & Co. Mr. J. T. Digby has acted as consulting electrician, and Mr. Alfred Davies as clerk of works.

Church, Springburn, Glasgow.—The new Wellfield U.P. Church is situated at the corner of Balgray Hill and Murdoch-street. The building is of red sandstone, and has been erected from the designs of Mr. John B. Wilson. The main entrance, which is from Balgray Hill, is by a deeply-recessed porch, leading into the vestibule. The church is divided into a nave and side aisles by moulded arches, with organ chamber at the east end, and has seating accommodation for fully 800 persons. Behind the church is a hall to accommodate 350 persons, and also class-rooms, cloak-rooms, vestry, and session-house, access to which can be had either from the church or the street. The principal contractors were:—Mason work, Hugh Nelson & Co., joiner, Thos. Brown; slater, Thos. Muir; plasterer, J. & A. Williamson; plumber and gasfitter, R. Munro; glazier, Joseph Miller; painter, Arch. Stirling; heating, Boyd & Sons; electric engineers, M'Aulay, Clark, & M'Laren; electric fittings, Milne & Sons; mosaic work, Mainzer & Co.

Wesley Central Hall, Fratton, Portsmouth.—The memorial-stone was laid on the 3rd inst. of a new hall that is to be built on a site at the corner of Fratton and Penhale roads. The frontage on Fratton-road will provide lock-up shops, with stores at the rear, and above the shops will be the central hall, with classrooms and vestries, a guild-room, and accommodation for a Sunday-school. The central hall will provide seating accommodation for 1,000 people. The main entrance will be from Fratton-road. The buildings will be faced externally with red pressed bricks, with stone dressings. The architect is Mr. J. Jameson Green, of Liverpool, and the contractor, Mr. J. Durant, of Portsmouth.

Primitive Methodist Buildings, Thornaby, Yorkshire.—A new church and Sunday school have just been opened at Thornaby for the Primitive Methodists. The buildings stand on a site surrounded on all sides by streets—the main front being to Peel-street, and one of the side elevations facing Cromwell-street, from which the school is approached. The church is 60 ft. long and 45 ft. wide, with an open roof in one span, and will seat 450 adults. Behind the pulpit is a large arched recess for the choir and organ. On each side of this recess are the vestries, and behind the choir, and at right angles with the church, the school is placed. It is 45 ft. long and 25 ft. wide. At one end is a class-room, boiler-house, back entrance, &c., whilst a balcony running along one side gives access to class-rooms over vestries, and to a large infants' class-room 25 ft. by 15 ft. There are five class-rooms and vestries in all. Mr. Thomas Brown, of Stockton, was the contractor, and the heating apparatus has been fixed by Mr. J. J. Spoor, of Bishop Auckland. The architect was Mr. T. W. T. Richardson, of Stockton, under whose supervision the work was carried out.

Presbyterian Church, Woodvale, Belfast.—The new Woodvale Presbyterian Church was opened on the 8th inst. The new church is placed at the junction of the Whiterock and Woodvale roads. Accommodation is provided for upwards of 1,000 people. A special feature is made of the tower, which terminates in a broached stone spire, at a height of 120 ft. The walling, which is of dark grey slate rock from Ballygowan, is relieved with dressings of Giffnock sandstone. The heating was carried out by Messrs. Musgrave & Co. Mr. James Blair executed the gas fitting. Mr. Thomas M'Millan carried out the work from the plans of Messrs. Young & Mackenzie, architects.

Tower, Parish Church, Henstridge, Somersetshire.—On the 11th inst. the foundation stone was laid of a new tower at the parish church of St. Nicholas, Henstridge. The plans for the new tower were prepared by Mr. E. Buckley (Diocesan Architect), and the contract has been entrusted to Messrs. Lye & Sons, Crewkerne, the total cost being estimated at 1,800*l.*

New Church for Easton, near Bristol.—A new church is being erected at Easton, the architect for which is Mr. George H. Oatley, of Bristol. Il will be of Pennant stone, with dressings of Bath stone. The whole will seat 800, but the portion at present contemplated will only accommodate half that number. The chancel, transepts, and the first bay of the nave, to be built by this time next year, will cost 5,300*l.* The site is to the east of the present iron church.

Church, Erith.—The dedication stone of the new church at Slade Green, Erith, Kent, was laid recently. The church is in the Early English style, and the portion now begun will consist of three bays of nave and apse, to accommodate 250 adults, the cost to be 2,000*l.* Mr. R. Philip Day is the architect.

Baptist Chapel, Grimsby.—A new school-chapel is being erected in Stanley-street, Grimsby, for the Baptists. It has a frontage of 63 ft. and a height of 24 ft., and will contain three class-rooms, committee-room, and a large class-room to seat 300 people. The architect is Mr. J. J. Cresswell.

Enlargement of Eastleigh Church, Hampshire.—The foundation stone has just been laid of the first part of the additions which are to be made to the parish church of Eastleigh. It is now proposed to build a nave and south aisle. The work is being carried out by Mr. W. Parminter, of Braintree, Essex, at a cost of 6,540*l.* When that is completed a chancel will be added, and the whole extension, it is estimated, will cost 10,000*l.* The architect for the whole of the additions is Sir Arthur Blomfield.

Parish Church, Oldcastle, Co. Meath.—On the 15th inst. the foundation stone was laid of the Oliver Plunkett Memorial Church at Oldcastle. The architect is Mr. W. H. Byrne, of Dublin.

Free Church, Ruthrieston, Aberdeenshire.—A new Free Church is to be built at Ruthrieston. The architects are Messrs. Brown & Watt, of Aberdeen.

Alterations, Stapenhill Church. Burton.—Considerable alterations are in progress in the interior of Stapenhill Church. The chancel floor is being raised and extended, and the reredos taken down and put on a higher level. A new font is also to be provided, whilst the pulpit will be altered and placed in a different position. The bulk of the work is being carried out by Messrs. Lowe & Sons, and the plans have been prepared by Mr. T. Jenkins, architect.

Board School, Percy Main, Northumberland.—An extension of the Percy Main Board School is now being carried out. It consists of an infant school adjoining the present building, containing a large main room and three smaller class-rooms, and affording accommodation for 250 children. The cost of the building is 2,750*l.* Mr. F. R. N. Haswell is the architect, and the contractors are Messrs. J. & W. Simpson, of North Shields.

Church School, Almondsbury, Gloucestershire.—The foundation stone has just been laid of the new school, which is to be built at the foot of Almondsbury Hill, in close proximity to the church. The new building will cost 1,700*l.* It will be constructed of red Cattybrook brick, with freestone dressings, and roofed with Broseley tiles. It will afford accommodation for upwards of 200 children. The main school-room (mixed) will be 48 ft. by 22 ft., and an infants' department 30 ft. by 18 ft. Further, there will be two class-rooms, as well as cloak-room accommodation for boys, girls, and infants., and separate entrances are to be provided for the three classes of scholars. Mr. H. M. Bennett, Bristol, is the architect, and the builders are Messrs. Adams & Jefferies, of Oldland Common. The contract is for 1,375*l.*

Theatre, Brighouse.—The Albert Theatre and Opera House at Brighouse was opened on the 12th inst. The building, which will seat about 1,200 persons, has been erected from plans by Messrs. Sharp & Waller, architects, Brighouse.

Workhouse, Wolverhampton.—The Wolverhampton Guardians have selected a tender for the erection of a new workhouse and premises. The lowest tender was that of Mr. Barlow, of Nottingham, the sum being 148,656*l.*, and this was accepted. Mr. Arthur Marshall, of Nottingham, is the architect.

Hospital, Manchester.—The foundation stone of the new St. Mary's Hospital and Manchester and Salford Lying-in Hospital was laid on the 9th inst. by the Countess of Derby. The main front of the

hospital, 280 ft. in length, faces Gloucester-street, the Oxford-street frontage being only some 25 ft. wide. A feature of the plans is that the accommodation is divided throughout the building into two portions. Each portion is distinct and furnished with separate entrances, staircases, and lifts. On the west side of the entrance the maternity cases are to be housed, whilst on the right the wards will be set apart for the treatment of diseases of women and children. The hospital proper, as far as wards are concerned, may be said to begin upon the first floor, although the circular pavilion will not be used for ward purposes at this level. On the east side of the building there will be, on the first floor, a ward for twelve beds, and three or four separate wards for one or more beds. The board-room will be on the same floor, near the grand staircase, and the library is to be placed at the Oxford-street corner, over the entrance for out-patients. The second and third floors are to be devoted to ward space, and the necessary administrative rooms in connexion therewith, whilst the rooms above are largely for the use of servants and others connected with the hospital staff. The hospital will be fitted for the accommodation of 125 patients, the main portion being reserved for diseases of women, and provision is to be made for the training of medical students, nurses, midwives, and monthly nurses. Hard Accrington red bricks, relieved by a moderate use of terra-cotta, form the facing material for the main walls. Messrs. Alfred Waterhouse & Son are the architects of the building; and the contractor is Mr. Vickers, of Nottingham.

PARISH ROOM, NEWTON ARLOSH, CUMBERLAND.—The new parish room at Newton Arlosh was opened on the 5th inst. The architect was Mr. J. H. Martindale. The building consists of a room 35 ft. by 18 ft., a small room for reading and games, and cloak room and porch. The work has been executed by the following contractors:—Mr. W. Pattinson, brick work; Mr. W. Marshall, joiner; Messrs. Graham & Crawford, plumbing; Mr. J. Kellet, roof tiling; Messrs. Johnston Bros., plastering; Messrs. J. Mark & Sons, painting and glazing.

NEW FEVER HOSPITAL FOR LEEDS.—At a meeting of one of the sub-committees of the Leeds Corporation on the 10th inst., Mr. Edwin T. Hall, architect, London, submitted drawings for the erection of a new infectious hospital on the Manston Hall estate, and presented a detailed report on his scheme. He proposes to provide accommodation for the treatment of 436 patients. The scheme comprises the erection of eight new pavilions for scarlet fever cases. In these buildings there are to be 240 beds. In two pavilions there will be sixty beds for diphtheria patients, while four of the existing pavilions are to be set apart for enteric diseases. In addition, five pavilions are to be provided capable of accommodating forty-eight patients for isolation. None of the buildings will be within 100 ft. of the boundary of the estate. Amongst the other structures shown in the drawings are a nurses' home, visitors' rooms, medical superintendent's house, a building for discharged patients, admission rooms, steward's stores, dispensary, hospital kitchen, female servants' home, laundry, ambulance stables, steward's house, cottages for married servants, mortuary, an engine-house, and an administration block. The hospital will be constructed of brick with York stone dressings. All parts of the hospital are to be connected by covered ways and subways. These subways will contain the steam and electric mains, and cold-water pipes for the various blocks. Mr. Hall estimates the total cost of carrying out his scheme, including the erection of a water-tower, to be used as a reserve both for Manston and Killingbeck Hospitals, and the electric plant for both hospitals, at 187,380*l.* A lengthy discussion took place on the question of whether or not the existing mansion on the estate should be converted into the administrative block, or an entirely new building be erected for this purpose. Mr. Hall recommended the latter course. By doing this he calculated they would save at least 100*l.* a year in maintenance expenses. The sub-committee accepted this view and adopted the scheme in its entirety.—*Leeds Mercury.*

FIRE STATION, PENRYN, CORNWALL.—On the 11th inst. a new fire station was opened at Penryn. Plans were drawn by the Borough Surveyor (Mr. J. P. Jenkins) and the contractor was Mr. Rickard.

NEW PUBLIC HALL, TORPHINS, ABERDEENSHIRE.—The "Learney Public Parish Hall," in the village of Torphins, was opened on the 9th inst. by Lord Sempill. The hall was designed by the late Mr. George Marr, architect, Aberdeen.

THE ADAM SMITH AND BEVERIDGE MEMORIAL HALLS AND LIBRARY, KIRKCALDY.—These buildings, situated at the corner of Bennochy-road and St. Brycedale-avenue, in Kirkcaldy, have just been opened. The structure embraces a hall, seated for 1,500 persons, but capable of accommodating a considerably larger number, with platform and orchestra seated for 190 persons; a lesser hall, seated for 700 persons; accommodation for reference and lending libraries, to be established under the Beveridge bequest; committee-rooms, kitchen accommodation, cloak-rooms, lavatories, &c. The architects are Messrs. Dunn and Findlay, Edinburgh.

NEW EPIDEMIC HOSPITAL, FORFAR.—An infectious diseases hospital is to be erected at Whitehills, Forfar, for the Dundee and Forfar Districts of Forfar County Council. After allowing for the laundry, fittings, painter work, and other contingencies, the total cost of the hospital is estimated at 6,500*l.* or 7,000*l.* The buildings consist of an administrative block, two isolation blocks, and a discharge block. The scarlet fever block consists of two wards of eight beds, with nurses' room and pantries, two bath-rooms and closet—all connected with the main buildings by through ventilated passages. The typhoid and diphtheria blocks are provided with two wards of two beds, with nurses' room, bathroom, and other conveniences. The offices are placed at the back, out of view of the wards, and consist of mortuary, two disinfecting chambers, with parlour and disinfector washing-house, large store, ambulance and van sheds, &c. The successful contractors are:—Mason work, Messrs. J. Cargill & Co.; joiner work, Messrs. A. Hay & Co.; plasterer, Mr. D. Masterton, all of Forfar; plumber, Mr. D. Brown, Dundee; slater, Messrs. W. Brand & Son, Arbroath; glazier, Mr. Douglas, Montrose; and ventilation, Messrs. R. Boyle & Son, Glasgow. The work will be proceeded with immediately, under the supervision of the architect, Mr. T. Martin Cappon.

PREMISES, ST. PAUL'S CHURCHYARD.—Messrs. Gordon, Lowther, & Gunton are the architects for some new premises to be erected for a firm of drapers and silk mercers at the corner of St. Paul's Churchyard and Paternoster-row. The adjoining premises, Nos. 55-7, St. Paul's Churchyard, have just been rebuilt, with a stone front, by Messrs. Patman & Fotheringham, of Islington, after the plans and designs of, we are informed, Mr. Beaumont.

FOREIGN.

FRANCE.—M. Alfred Normand has been appointed President of the Committee for organising the International Congress of Architects in connexion with the Exhibition of 1900; MM. Frantz Blondel, Charles Lucas, and Octave Courtois-Suffit are the Vice-Presidents, M. Poupinel the General Secretary, MM. Roussi, Pucey, and Newnham Assistant Secretaries, and M. Bartaumieux Treasurer. ——M. Vaudremer has been appointed President of the Jury of Admission for architectural drawings for the 1900 Exhibition, MM. Pascal and Daumet Vice-Presidents, and MM. Defrasse and Mayeux Secretaries.——The Baroness Nathaniel de Rothschild has left to the Louvre a collection of fourteen pictures, including works of Ghirlandajo, Mantegna, Tintoretto, Botticelli, and Fra Angelico.——M. Fagel, the sculptor, has completed the models for a series of busts to be carved out of the exterior walls of the church of Sacré Cœur at Montmartre, representing the portraits of all the collaborators in the work—bishops, priests, architects, sculptors, contractors, and foremen. M. Raulin is directing this novel scheme of decoration, which however was part of the scheme of the original architect, the late M. Abadie.——The new Hôtel de Ville of Asniéres was opened last Sunday; a building designed by M. Garnier.——The Conseil-Général of the Seine is occupied with a scheme for a canal from the Marne to the Seine, at an estimated cost of over 32,000,000 francs. ——The equestrian statue of the Duc d'Aumale, by M. Gerôme, was unveiled at Chantilly last Sunday.—— The Jury of the architectural competition of the first-class students at the Ecole des Beaux-Arts have awarded medals to M. Marchal (pupil of M. Laloux), M. Landler (pupil of M. Deglane), and M. Prost (pupil of M. Marcel Lambert). The subject of the competition was "A Restaurant by the Seaside, in a Southern Climate."——The death is announced of M. Eugène Fournière, architect, of Paris. ——M. Louis Godfrey, engineer, architect, and "Directeur des Travaux" at Limoges, has died at the age of sixty-eight. In 1858 he was concerned, as engineer, with the construction of the first railways from Moscow to St. Petersburg and to Nijni-Novgorod. He was afterwards attached to the works for the line from Limoges to Brive. As architect, he carried out during the last twenty years a number of works in the district of Haute Vienne. He was a member of the Société Centrale des Architectes, and one of the founders of the Société des Architectes of Limousin and Perigord.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The office of Mr. J. W. Thackray, architect, has been transferred from 14, Infirmary-street, to 4, Greek-street, Leeds (ground floor).——A partnership has been arranged between Mr. Percy T. Runton, architect, of Hull, and Mr. W. E. Barry, architect, of Scarborough, which will be carried on under the style of "Runton & Barry," at Hull and Scarborough.——Mr. H. C. Boyes and Mr. C. Waymouth, architects, have removed their offices from Ormond House to 6, Grocers' Hall-court, E.C.

JESUS CHAPEL, WORCESTER CATHEDRAL.—In connexion with the illustrations of the screen and reredos in this chapel, which appeared in our issue of July 29, we have been asked to mention that the work was executed by Messrs. H. H. Martyn & Co., carvers, of Cheltenham. The previous omission of their name was an oversight for which we were not responsible.

PROPOSED BUILDING REGULATIONS IN ABERDEEN.—The new Consolidation, Municipal, and Police Bill for Aberdeen, to be introduced next session in Parliament, provides that streets in future shall never be less than 50 ft. wide, that buildings shall be prevented being brought forward on the street, and that new houses are to be surveyed before occupation. It is also proposed to regulate the height of new buildings.

IMPROVEMENT SCHEME, MANCHESTER.—On the 11th inst. the enterprise of the Manchester Corporation was further illustrated by the opening of that portion of Whitworth-street which, running by the side of the South Junction Railway, opens up a wide thoroughfare between Oxford-street and Deansgate and Chester-road at the point where Knott Mill Station is situated. The conception of the scheme was due to a desire to establish a direct route between London-road and Oxford-street in order to relieve the congestion of traffic, but the desirability of continuing the new street to Chester-road became so apparent that it was eventually decided to extend the scheme. In 1883 Sir Joseph Whitworth offered to give land between Sackville-street and Whitworth-street, and that having been accepted land and property were bought to widen the thoroughfare to the London-road end of Whitworth-street. A large number of working people had to leave their houses in consequence of the wholesale demolition that was inevitable, but they were well provided for in the specially-built dwellings in Oldham-road. Eventually a level street 20 yards wide between London-road and Oxford-street was made. The Committee found the task of directly connecting Oxford-street with Chester-road a matter of some difficulty, but eventually, by making Gloucester-street and South Junction-street into one thoroughfare under the title of Whitworth-street, Oxford-street was connected with Gaythorn. Between Gaythorn and Knott Mill rows of dilapidated cottages stood, but these have been pulled down and an excellent approach made to the station. The displaced residents were provided with dwellings in the Miles Platting neighbourhood. The total length is 1,520 lineal yards, or about 7-8ths of a mile, the width varying from 18 yards to 25 yards. In one section of the street, *i.e.*, between Gloucester-street and Albion-street, extensive filling up to the depth of 11 ft. had to be done in order to obtain the necessary gradient. The estimated cost of purchase of the various properties, formation of the street, and the provision of cottages at Miles Platting for the population displaced under the 1893 Act by the Gaythorn-street and South Junction-street improvements, and after allowing for the value of the residue land, was 200,000*l.*—*Manchester Courier.*

MORECAMBE IMPROVEMENT SCHEMES.—At a meeting of the Morecambe District Council, on the 9th inst., the Surveyor was instructed to prepare draft plans for the widening of Marine-road and the Promenade west of the Midland Hotel. With reference to the sewerage scheme, an agreement was entered into appointing Messrs. Beesley, Son, & Nichols, engineers, for the carrying out of the work, and an advertisement inviting tenders for the first section of the new sewer was approved. The Local Government Board wrote sanctioning a loan of 5,000*l.* for the erection of a Beaman & Deas refuse destructor at the Council's electricity works. The Local Government Board also wrote sanctioning the loan of 1,124*l.* for the purposes of street construction in connexion with the proposed bridge over the Midland Railway and the new road in continuation of Euston-grove to the West-End, such new road being a diversion of Moss-lane. The demand for electric current being far in excess of the supply, it was resolved to apply to the Local Government Board for power to borrow an additional 25,380*l.* with a view to the extension of plant at the electricity works. Plans submitted by Messrs. Gardner & Scott, for the reconstruction of the West End Market, and the erection of a concert-hall over it, and plans for thirty new houses, were passed.

HOUSING SCHEME, WEST HAM.—From West Ham comes the largest scheme, under Part III. of the Housing Act, that has ever been formulated by any municipality. The London County Council and the Corporations of Birmingham, Manchester, and Glasgow have carried out greater schemes under other parts of the Act, in reference to the clearing of slum areas and the rehousing of the displaced tenants; but the West Ham Town Council has decided to spend 1,000,000*l.* on building cottages alone. The project is to buy 104 acres of vacant land in various parts of the borough and erect some 3,000 dwellings for the working classes. The Town Council has decided to apply to Parliament for power to purchase the sites compulsorily. In the meantime it has instructed its agent to open up negotiations at once with the owners of the first three sites which have been scheduled. One of these is outside the borough in Leyton, but it is doubtful, in view of counsel's opinion given to the London County Council, whether power exists for a municipality to buy land for housing purposes outside its own area. The town councillors of the borough declare that they have been forced to prepare so large a scheme because of extortionist landlords who are invading the district. They say that the same class of landlords, who have lately

doubled and trebled the rents in Stepney and Bethnal Green, are now coming over the border and buying up poor property in West Ham. Two sets of municipal cottages have already been provided in West Ham, and the Corporation is also preparing to build a municipal lodging-house.—*Daily Chronicle.*

Sewage Disposal at Bristol.—The Bristol Town Council have resolved to promote a Bill in Parliament for a main drainage scheme, costing 500,000*l.*, to clear the sewage out of the River Avon and carry it below Avonmouth, where it will be discharged into the Channel.

CAPITAL AND LABOUR.

The Hull Building Dispute.—Nearly a dozen contractors and representative builders have written to the bricklayers' and the labourers' committees requesting them to arrange for the return of the whole of the men previously employed by these firms "on the old terms and conditions." The names of those who have thus disassociated themselves from the policy pursued by the majority of the Masters' Association, and who have sent in applications for the return of their men, include the following:—Messrs. F. Blackburn & Son, Mr. Goates, Mr. Beilby, Mr. Greenwood, Mr. Hanton, Mr. M. Harper, Mr. J. T. Skinner, Messrs. Sanderson, and Mr. Wood.—*Eastern Morning News.*

LEGAL.

WORKMEN'S COMPENSATION ACT.

Some points in connection with the Workmen's Compensation Act were dealt with in a judgment delivered on Friday last week by Judge Stonor, at Marylebone County Court.

The applicant in the case—according to the judgment—was employed by the respondents (Messrs. John Aird & Sons, contractors, London) in striking an iron wedge to open a road, beneath which water-pipes were being laid. Another workman was striking the wedge, alternately with the applicant, and knocked it on one side. Thereupon, the applicant's hammer missed the wedge, and swung right round, dislocating his shoulder. The applicant deposed that he sometimes had to help in lowering the pipes, and for that purpose worked a pulley. The defence was that no mechanical power at all was used on the job, and that consequently the case did not come within the Act. The only words in Sec. 7 (1) which could point to the case coming within the Act were "engineering work," as defined by the Sec. (2), namely, "any work of construction, alteration, or repair of a railroad, harbour, dock, canal, or sewer, and includes any other work for the construction, alteration, or repair in which machinery driven by steam or water or any other mechanical power is used." The first question was whether the words "any other work" meant any other work whatever, or only any other work *ejusdem generis* with work done on a railroad, &c., of course, also, falling within the subsequent words of the Section. His Honour held the latter view. The subsequent words, however, requiring that the work should be one in which "machinery driven by steam, water, or other mechanical power is used" gave rise to further very difficult questions. It was evident, he thought, that machinery was used on the work, namely, the pulley and chain for lowering the pipes, and the question to be considered was whether such machinery was driven by any mechanical power or not. His Honour thought that the words "mechanical power" must, in the present case, be also construed as *ejusdem generis* with those mechanical powers previously mentioned, namely, steam and water, which act automatically and continuously after being set in motion, in the first instance, by manual labour. He was, therefore, on the whole, of opinion that the present case did not fall within the Act, and gave his award in favour of the respondents, without costs.

ACTION AGAINST THE ARMY AND NAVY STORES FOR ALLEGED INFRINGEMENT OF ANCIENT LIGHTS.

The case of Symons & Co., Limited, *v.* the Army and Navy Co-operative Society, Limited, came before Mr. Justice Darling, sitting as Vacation Judge, on the 18th inst., on a motion by the plaintiffs for an interim injunction to restrain the defendant Society until the trial from building so as to interfere with the plaintiffs' ancient lights in Victoria-street, S.W.

It was stated by Mr. Everett, Q.C., who appeared in support of the motion, that the defendants were proposing to erect a building nearly 80 ft. high, which would materially injure the access of light coming to the skylights of the plaintiffs' premises on the south side. The plaintiffs were cabinetmakers, and it was important that there should be a sufficiency of light in the workrooms, which were lighted by the skylights in question.

His Lordship: Why do they not put a skylight on the north side of the roof?

Mr. Everett: I should not get sufficient light then. It has been held that you cannot compel a man to take damages for infringement of ancient lights.

In the result, his lordship, without calling upon Mr. Alexander, Q.C. (counsel for the defendants), held that the plaintiffs had made out no case for an interlocutory injunction, and dismissed the motion, reserving the costs till the trial.

ANCIENT LIGHT DISPUTE IN THE WHITECHAPEL ROAD.

The case of Abrahams *v.* Schneider came before Mr. Justice Darling, sitting as Vacation Judge, on the 18th inst., on an application by the plaintiff for an interim injunction to restrain the defendant until the trial from building so as to interfere with the plaintiff's ancient lights to a house in the Whitechapel-road.

Mr. Alexander, who appeared for the plaintiff in support of the motion, said the defendant had filed no affidavit in answer to the plaintiff's case, so the matter was practically undefended.

Counsel for the defendant stated that the reason the defendant had filed no evidence in answer to the plaintiff's case was that he (counsel) could not find in any of the plaintiff's affidavits the slightest trace that the plaintiff's lights were ancient lights. If, however, his learned friend could prove that the lights were ancient, the case could be dealt with at once.

Mr. Alexander said there was no doubt about the lights being ancient, and if it had been left out of the affidavits it was a mere inadvertence and could be set right by making another affidavit which should be filed.

His Lordship: I have looked at the affidavits, and I do not see that it is mentioned that they are ancient lights.

Mr. Alexander: Well, they are ancient lights, and I hope that your lordship will not dispose of this motion without giving me an opportunity of filing another affidavit.

His Lordship: Yes; you must file another affidavit.

Counsel for the plaintiff said if the plaintiff would satisfy the defendant's surveyor that his lights were ancient, he (counsel) would give an undertaking that the defendant would not proceed with his building without giving the plaintiff forty-eight hours' notice of his intention to do so.

Mr. Alexander accepted this undertaking, and accordingly his lordship directed that the motion should stand till the trial, the costs being reserved.

MEETINGS.

Friday, October 20.

The Architectural Association.—Conversazione, to be held at King's Hall, Holborn Restaurant. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. Joseph Priestley on "Ventilation, Warming, and Lighting." 8 p.m.

Institution of Junior Engineers.—Annual general meeting at the Westminster Palace Hotel. Election of officers for nineteenth session, Council's report, &c. 8 p.m.

Saturday, October 21.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Southwark and Vauxhall Waterworks, Hampton. 3 p.m.

Northern Architectural Association.—An Excursion meeting. Members to assemble at the new Y.M.C.A. Buildings, Blackett-street, Newcastle, at 2.30 p.m.; at not earlier than 3 p.m., they will proceed by brake to Gosforth, to inspect the New City Asylum Buildings.

The Architectural Association of Ireland.—Visit to the Richmond Surgical Hospital, North Brunswick-street. 2.45 p.m.

Monday, October 23.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. Louis Parkes on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.

Tuesday, October 24.

The Architectural Association of Ireland.—Annual Smoking Concert, to be held in the Grosvenor Hotel, Dublin.

Wednesday, October 25.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection at East London Soap Works, Bow, 3 p.m.; (2) Mr. H. D. Searles-Wood on "Building Materials," 8 p.m.

Thursday, October 26.

Carpenters' Hall, London Wall (Lectures on Sanitary Building Construction).—Mr. Thomas Blashill on "Sanitary Construction, Warming, and Ventilation." 7.30 p.m.

Friday, October 27.

The Architectural Association.—Mr. Lawrence Harvey on "The Construction of Circular Stairs and Spiral Vaults." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Percival Gordon Smith on "Sanitary Building Construction." 8 p.m.

Institution of Mechanical Engineers.—(1) Mr. W. Ingham on "The Incrustation of Pipes at Torquay Water Works." (2, time permitting) Professor W. Ripper on "A Continuous Mean Pressure Indicator for Steam-Engines." 8 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).—Mr. A. Wagstaff on "Glasgow Cathedral." 8 p.m.

Saturday, October 28.

Sanitary Institute (Demonstrations for Sanitary Officers.—Inspection at the Richmond Main Drainage Works, Mortlake. 3 p.m.

PRICES CURRENT OF MATERIALS: WOOD.*

Per Petersburg standard hundred.

	£ s. d.	£ s. d.
White Sea: first yellow deals	17 15 0	18 15 0
Second do.	14 0 0	15 10 0
Third do.	12 5 0	13 10 0
Battens, 40s., 30s., and 15s. less respectively.		
Petersburg: first yellow deals	14 10 0	17 0 0
Second do.	11 10 0	13 0 0
Battens, 30s. and 20s. less respectively.		
Petersburg, white deals	10 10 0	12 10 0
Do. white battens	9 5 0	10 15 0
Riga, white deals	9 0 0	10 0 0
Swedish mixed yellow deals	14 0 0	17 10 0
Third do.	13 0 0	15 10 0
Fourth do.	11 10 0	12 10 0
Fifth do.	10 10 0	11 10 0
Battens, 30s., 20s., and 10s. less respectively.		
Whitewood, 10 to 20 per cent. less.		
Finnish unsorted yellow deals	10 10 0	11 0 0
Battens, 10s. and 5s. less respectively.		
Whitewood, 5 to 10 per cent. less.		
Norwegian second yellow battens	8 0 0	8 10 0
Third do.	7 10 0	8 0 0
Fourth do.	7 0 0	7 10 0
Whitewood, 10s. less.		
Danzig, Crown Deck deals, per 40 ft. 3 in.	0 15 0	1 5 0
Brack	0 12 0	1 0 0
St. Lawrence Pine deals, &c., per P.S.H.:—		
1st, Bright and Dry, regular sizes	20 5 0	26 15 0
" " oddments	13 5 0	20 0 0
2nd " regular sizes	15 5 0	18 10 0
" " oddments	10 15 0	14 5 0
3rd " regular sizes	9 5 0	10 15 0
" " oddments	7 15 0	8 15 0
4th " regular sizes	7 10 0	8 5 0
" " oddments	6 15 0	7 10 0
St. Lawrence Spruce deals, &c.		
First, regular sizes	9 5 0	11 5 0
Second "	8 0 0	9 0 0
Third "	7 15 0	8 10 0
Fourth "	6 15 0	7 10 0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.		
New Brunswick Spruce deals, &c.	7 15 0	8 10 0
Oddments, battens, and fourths	7 0 0	8 0 0
United States pitch pine planks and boards	8 10 0	12 0 0
Prepared Boards, per square		
1½ by 6½ and 7 in. 1st yellow	10 6	15 0
" " 2nd "	9 6	10 9
1 by 6½ and 7 in. 1st "	9 9	11 3
" " white	7 6	9 9
" " 2nd yellow	7 6	9 9
" " white	6 3	7 9
⅞ by 6½ & 7 in. 1st & 2nd yellow	7 6	8 6
" " white	7 0	8 0
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)	7 6	8 3
¾ by 6½ and 7 in. 2nd yellow and white (ditto)	7 0	7 9
⅝ by 6½ and 7 in. 1st yellow and white (ditto)	5 6	6 6
⅝ by 6½ and 7 in. 2nd yellow and white (ditto)	4 0	5 6
Narrower widths at 10 per cent. less.		
3rd quality at 15 per cent. less than 2nd.		
Danzig and Memel Fir Timber— per load		
Best middling	3 5 0	3 10 0
Good middling and Second	2 15 0	3 5 0
Common middling	2 10 0	2 15 0
Undersized	2 10 0	3 0 0
Swedish and Norwegian Balks	2 10 0	2 15 0
Baltic Oak Timber—		
Danzig and Stettin—Large	3 0 0	4 0 0
Small	2 5 0	3 0 0
Quebec Timber per load		
Yellow Pine	5 5 0	7 0 0
Oak	4 7 6	6 5 0
Elm	4 17 6	5 10 0
Ash	4 0 0	5 0 0
Birch	2 15 0	4 12 6
New Brunswick, &c., Birch	2 5 0	2 17 6
American Pitch Pine Timber	3 10 0	3 15 0
Wainscot, per log, 18 cubic ft.—		
Crown (Eng. & Dutch) nominal	4 2 6	5 15 0
Brack nominal	3 7 6	4 7 6
Lathwood, per cubic fathom—		
Petersburg	4 0 0	6 10 0
Riga and Danzig	4 10 0	5 10 0
Norway Poles, per ft. run	0 0 1	0 0 1½
Oak Staves, per mille full size pipe		
Memel, Crown	210 0 0	220 0 0
Brack	180 0 0	190 0 0
Danzig	165 0 0	175 0 0
Bosnia, single Barrel (nominal)	28 0 0	30 0 0
United States, Pipe	35 0 0	42 10 0
Hogshead, extra heavy and double extra	27 10 0	32 10 0
Indian Teake per load	11 10 0	16 10 0
British Guiana Greenheart	0 0 0	8 0 0
Mahogany, per foot superficial—		
Honduras, cargo average	0 0 4½	0 0 6
Nicaragua, do.	0 0 4½	0 0 5½
Tabasco, do.	0 0 4	0 0 6½
Mexican, do.	0 0 3½	0 0 4
Panama, do.	0 0 3	0 0 4
African, do.	0 0 3½	0 0 5
Cuba, do.	0 0 5½	0 0 7½
St. Domingo, do.	0 0 5	0 0 7
Do. Curls (good to prime)	0 0 9	0 1 3
Walnut, American (logs)	0 2 3	0 4 6
Do. do. (planks and boards)	0 2 0	0 7 6
Italian, per foot superficial	0 0 3	0 0 7½
Black Sea, per ton	6 0 0	12 0 0
Satin Walnut (logs) per foot cube	0 1 0	0 1 3
" (planks and boards)	0 2 0	0 2 9

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT—*continued.*

	£	s.	d.	£	s.	d.
Sequoia (Californian redwood), per foot cube	0	1	9	0	2	0
Whitewood, American (logs)	0	1	3	0	1	6
" " (planks and boards)	0	1	6	0	2	9
Quartered oak " " "	0	2	3	0	4	0
Kauri pine (logs)	0	1	9	0	2	0
" " (planks)	0	2	3	0	2	9
Jarrah (planks)	0	2	0	0	2	3
Lancewood spars each, fresh and large	0	5	0	0	8	0
Lancewood spars, ordinary to fair	0	4	0	0	5	0
Degame spars	0	8	0	0	10	6
METALS.						
IRON—Pig, in Scotland ton	3	9	9	0	0	0
Bar, Welsh, in London	6	0	0	6	5	0
Do. do. at works in Wales	5	15	0	5	17	6
Do. Staffordshire, in London	6	5	0	7	10	0
COPPER—British cake and ingot	79	15	0	80	5	0
Best selected	81	5	0	81	15	0
Sheets, strong	85	0	0	86	0	0
Chili bars	75	13	9	0	0	0
YELLOW METAL lb.	6½d.			7d.		
LEAD—Pig						
Spanish ton	16	10	0	0	0	0
English Com. Brands	16	15	0	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards	17	15	0	0	0	0
Pipe	18	5	0	0	0	0
ZINC—English sheet ton	27	0	0	0	0	0
Vieille Montagne	28	0	0	0	0	0
Spelter	22	5	0	22	7	6
TIN—Straits	144	7	6	0	0	0
Australian	144	10	0	145	0	0
English Ingots	148	0	0	149	0	0
Banca	0	0	0	0	0	0
Billiton	0	0	0	0	0	0
OILS.						
Linseed ton	22	15	0	0	0	0
Cocoanut, Cochin	29	10	0	30	0	0
Do. Ceylon	25	15	0	0	0	0
Palm, Lagos	27	10	0	0	0	0
Rapeseed, English, pale	25	15	0	0	0	0
Do. Brown	24	10	0	0	0	0
Cottonseed ref.	19	10	0	20	10	0
Oleine	17	5	0	19	0	0
Lubricating U.S.	0	7	0	0	9	0
Do. Black	0	6	3	0	8	0
TAR—Stockholm barrel	1	6	6	0	0	0
Archangel	1	0	0	0	0	0
Turpentine	38	2	6	38	5	0

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until December 11.

[1898] 14,514, Cox, Switch-boards. 20,793, Adams Door-closing Appliances and Door-checks. 20,972, Anders & Wilson, Adaptation of the Telephone to Electrical Bell Pushes. 21,343, Hawley, Pressing and Securing Sectional Blocks of Timber to Form Rectangular or Square Blocks. 21,454, Hill, Oil Lamps with Movable Burners. 21,584, Homan, Fireproof Floors, Ceilings, &c. 21,609, Robinson, Domestic Fire-places. 22,120, Killick & Cochran, Combination Safety Steam Cock and Door Latch. 22,791, Kershaw, Guard for Surfacing or Hand-Feed Planing Machines. 22,803, Steele, Maple, & Verity, Incandescence Electrical Lamps. 22,865, Little, Elevators. 23,186, Jackson & Hornby, Friction Driving Clutches. 23,232, Lee, Blowers and Draught Regulators. 23,489, Brown, Hinged Sliding Window Sashes to Open Inwardly. 23,526, Woods, Devices for Automatically Closing Doors, &c. 23,605, Rogers, Swinging Lamps for Tip-carts, &c. 23,792, Doyle, Flushing Valves. 24,381, Hiscock, Sliding Windows. 24,418, Langdon - Davies, Alternating Current Motors. 24,694, Ellmore, Flame Regulator for Stoves or Lamps. 25,000, Gsell, Purifying Waste Water or Sewage by Precipitation. 25,400, Jewhurst, Stoves or Fireplaces. 25,500, Sivewright, Cattle-Stall and Similar Fittings. 25,808, O'Donahue & Halden, Surveying Instruments for Use in Mines or Elsewhere. 27,008, Von Forell, Cement. [1899] 227, Taylor, Fastening Knobs to Spindles. 1,258, Broadbents, Jaws of Machines for Crushing or Breaking Stones, Ores, &c. 3,102, Watts, Generation of Acetylene Gas. 8,913, Hall, Cut-outs, Fuse Boxes, &c. 12,662, Taylor, Connecting Outlet Pipes from Closets, &c., to Soil or Waste-water Pipes, 12,928, Forney, Combined Bolt and Lock. 13,249, Navrogordato, Incandescent Oil Lamps. 14,299, Brainard, Fountains. 15,369, Mathiesen, Arc Lamp with two Arcs in Series. 15,659, Finch, Kiln for Burning Sewer Pipes, &c. 15,789, Smart, Machines for Making Metal Hinges. 15,954, Richards, Ventilating Fans. 16,221, Beck Bros. & Co., Wash-basins. 16,299, Hammond, Wire Ropes or Hawsers. 16,328, Dubingson, Water-meters. 16,373, Burns, Vibrating Switches or Contact Breakers. 16,800, Stewart, Lead Sockets for Rain, Water, Waste, Soil, Ventilating, and other Pipes. 16,809 Haedicke, Device for Drawing Curves. 16,878, Siemens & Halske, A. G., Telephonical Apparatus for Simultaneous Transmission and Receipt of Messages to and from Several Distant Stations. 17,092, Singer Manufacturing Company, Lubricating Cranks. 17,203, Earle, Pole Pieces for Dynamos. 17,478, Pace, Gas and Similar Engines. 17,489, Vulcan Manufacturing Company, Stop Mechanism for Lubricator. 17,640, Berford, Dunn, & Wilson, Adjustable Seats and Desks. 17,753, Fry, Corner Plates for Stair Steps, Window-sills, Room Floors, &c. 17,768, Siemens & Halske, A. G., Apparatus for Rope Haulage in Mines, &c.

ABSTRACTS OF PATENTED INVENTIONS.

13,471.—GLAZING BARS FOR ROOFS: *G. F. Wright.*—The glazing bars or astragals have drainage channels, and to their central projecting webs are secured sheet-metal caps with screws; or they may be sprung over beads or enlargements of the webs, and their edges are corrugated for packing-strips of lead or asbestos. Channels are provided underneath for carrying off water of condensation.

13,504.—INCANDESCENT GAS LAMPS: *A. Koch.*—The process of making durable mantles, &c., is described as being suitable to be used with that covered by No. 30,145 of 1897. The fabric is first impregnated with an aqueous solution of thorium nitrates. It is next dried, powdered, and calcined, then dipped into an admixture of organic compounds of silicon and alcoholic solution of cerium, and finally is ignited and calcined again.

13,537.—SIPHON-DISCHARGE: *R. G. Howson.*—The inventor's object is to provide for an automatical action; a rubber ball enclosed within a perforated cover closes a hole in the crown of the siphon, the admission of water traps the air until the water level reaches to and floats the valve, whereby compressed air escapes and the siphon's action begins, the arrangement will serve for a bell siphon.

13,545.—SNATCH BLOCKS: *J. Harris & H. Newham.*—To a pivotted plate is fastened the pulley's axle resting in circular slots made in each of the cheeks, on application of the load the axle as it descends in the slot turns the plate until the latter's over-hanging edge engages with a shoulder on the block casing.

13,574.—CIRCULAR-SAW GUARDS: *S. Lebus.*—About one half of the saw is covered with a curved plate, which, together with two side-plates, rests adjustably upon a support by means of a radial arm at whose end is a bracket to be adjusted upon a vertical axis having an ascertained range.

13,651.—ATMOSPHERICAL GAS BURNERS FOR STOVES, &c.: *H. J. Yates (Arden, Hill & Co.).*—In order that either one set or both sets of the jets of a duplex burner may be used, the burner consists of two portions whereof each has sets of T-shaped nipples, the flat sides of the burners resting together; nozzles on the supply-pipes lead into the mixing-chambers; the burner also may be made as a multiple burner having superimposed sections.

13,677.—DEEP-BORING APPARATUS: *J. Cox.*—To permit removal of the borings without withdrawal of the rods, the latter are held by a clamp in a screwed barrel, which is fed by a hand-wheel and a nut and is turned by a feathered worm-wheel driven from the hand-wheel; an annular bucket for taking the borings slides upon the rods and is raised by a rope; the bucket is held by cams so that it may turn with the rods when the rope is slackened; when the apparatus is working the rope is disengaged from the winch on the tripod and is hooked to the rods.

13,715.—SPIGOT AND SOCKET JOINTS: *T. Brooks & A. M. Ayles.*—To facilitate jointing, helical corrugations are formed upon thin metal pipes, the corrugations being right-handed and left-handed respectively, or the joint may be made by screwing together two pipes that have corrugations to correspond with one another.

13,771.—ACETYLENE LAMPS: *G. Josephson.*—For standard or table lamps a detachable water vessel fits into the removable portion of the pedestal, and within the water vessel is inserted a tube that joins with the burner, and has at its end a lower perforated vessel for the carbide-holder. A cock in the tube controls the flame.

13,824.—SPARK ARRESTERS: *T. Thorson.*—A fan, driven through a baffle-box which contains water and has a chimney-pipe at its end, draws away the smoke, the draught being regulated by shutters that exclude or admit air at the eye of the fan. The fan can be arranged on the side of a short chimney, to be closed by a lid when the fan is used or opened whenever the furnace is burning without smoke.

13,878.—JOINTS FOR EARTHENWARE PIPES: *R. Ames.*—On the bottom of the flange or collar at one end of a pipe is formed a semicircular projection which has a tapering groove concentrical with the pipe's bore. At the pipe's other end is a flange, whose edge has an inclined surface for engagement with a similar surface of the semicircular projection. Holes and recesses are provided for the filling of cement, &c., or the joint may be made with grease and red lead, the faces being scored; whilst a tight fit may be obtained by means of artificial faces composed of pitch and other materials laid on with moulds in the customary manner. For the projections lugs can be substituted, and both pipe-ends may be fashioned alike and reversed, one half of the collar-end having its edge tapered, and the other half being made with a projection.

13,931.—PRESERVATIVE AND ANTI-FOULING COMPOSITIONS: *H. F. Clough, A. Turner, & J. Turner.*—The paint or composition for preserving metallic and other surfaces consists of the precipitate, dissolved in turpentine, of tallow melted into a hot solution of caustic soda with the addition of an aqueous solution of alum.

13,991.—STEELYARDS: *C. Brecknell.*—On the top of the counterpoise is fitted a bracket so that it may tilt in a direction opposite to that of the inclination of the shaft, and may prevent sliding by its engagement with the shank's lower edge.

13,993.—CIRCULAR-SAW GUARDS: *I. Nall.*—The two halves of the guard are hinged upon the end of a horizontal rod which is sustained by a bracket at the back of the bench, the leading edge of each half is sloped in order that it may be easily raised by the advancing wood, and the guard has plates on each side of the saw, the front of one of the halves being quite closed in.

14,047.—MOULDING BRICKS, TILES, AND BLOCKS: *R. Bradshaw.*—The shaft of the pug-mill, with thrust bearings, works in two cylinders, so that the two pressures are made to counter-balance, the smaller cylinder serves for dry or stiff clay and affords the same resistance as that of the more plastic clay in the larger cylinder; hoppers feed clay to the cylinders, whence it is forced through perforated plates and through mouthpieces or dies; the width of the dies is regulated by positively rotated rollers which also give any desired shape to the stream of clay.

14,051.—SAFETY SUSPENDING APPARATUS: *G. Brown.*—The lifting rope is fastened to side plates bolted to a cross beam. A disc, between mounted pulleys upon a shaft, and fixed to the shaft, carries two sets of peripheral pawls which engage respectively with internal ratchet teeth upon the pulleys. Two ropes fixed to the shaft's top pass twice around the pulleys and thence around another pulley to the end of a weighted lever. When the cage moves normally the two middle pulleys turn in reversed directions, but since the pawls upon the disc point in the same direction, only one pulley is locked to the shaft at the same time, namely, one during the descent and one during the ascent, so the shaft is turned in only one direction. If the speed becomes excessive, a disc at the end of the shaft is locked by the engagement of the lower end of a rod, which the governor depresses, with a ratchet wheel. As the shaft turns round the plates become screwed together by the disc, and the consequent jamming of the pulleys stops the cage's motion.

14,080.—BEARINGS FOR BRIDGES, GIRDERS, AND PRINCIPALS: *W. G. Watts.*—The inventor's purpose is to allow for contraction or expansion in any direction; he places a block, which has convex surfaces, between concave plates upon the girder and pier respectively.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 3.—By THOMAS MARSON (at Nuneaton).
Dadlington, Leicester.—A freehold farm, 66 acres £2,000
Stoke Golding, Leicester.—A freehold farm, 71 a. 2 r. 27 p. 1,300
October 4.—By E. BAILEY & SON (at Newark).
Normanton-on-Trent, Notts.—Various enclosures, 61 a. 2 r. 11 p., f. and c. 1,940
By MASON & SONS (at Louth).
Stewton, Lincs.—A freehold farm, 132 a. 0 r. 18 p. 2,500
October 4 and 5.—By DRIVER, JONAS, & Co. (at Chepstow).
Chepstow, Monmouth.—9, High-st., f., r. 50*l.* 1,350
4, Beaufort-sq., f., r. 35*l.* 900
Station-rd., the Market Building, f. 580
11, 23, and 24, St. Mary-st., and 2, Middle-st., f. 1,670
St. Mary-st., f.g.r. 40*l.*, reversion in 36 yrs. 1,150
9, Upper Church-st., f., r. 10*l.* 260
7, 8, and 9, Middle-st.; 17, Lower Church-st.; and 4 and 5, Hawkers Hill, f. 580
16, Bridge-st., f., r. 25*l.* 700
Bridge-st., f.g.r.'s 39*l.*, reversion in 96 yrs. 1,065
Bridge-st., residence, buildings, and yard, f. 410
St. Anne's-lane, the Bridge Saw Mills, area 1 a. 0 r. 18 p., f. 1,750
St. Anne's-lane, freehold yard, workshops, &c. 175
20, St. Anne's-lane, f. 105
11, The Back, with wharf and dock, also the old Custom House, f. 690
The Back, the Bridge Foundry and Engineering Works, together with "Ye Hole in Ye Wall" p.-h., and six houses, area 8 a. 1 r. 20 p., f. 3,425
22 to 30, Lower Church-st., f. 1,250
Freehold riverside property, including Cattle Market, market tolls, and various buildings, area 39 a. 3 r. 28 p. 7,000
Hardwick-terrace-rd., four enclosures of building land, including Vine Cottage, 15 a. 1 r. 26 p., f. 2,705
Hardwick-rd., f.g.r. 20*l.*, reversion in 7 yrs. 655
Hardwick-rd., f.g.r. 5*l.*, reversion in 95 yrs. 155
Hardwick-rd., &c., eighteen plots of building land, f. 1,145
35 and 36, Moor-st., f. 260
18, Welsh-st., f. 480
Mountain-rd.. Hunt Field, 7 a. 2 r. 7 p., f. 770
Tintern-rd., f.g.r. 20*l.*, reversion in 94 yrs. 530
Tintern-rd., four plots of building land, 2 a. 1 r. 18 p., f. 880
October 5.—By PROTHEROE & MORRIS (on the estate).
Hockley, Essex.—Main-rd., &c., fifty-six plots of land, f. 1,042
Various enclosures, 38 a. 2 r. 21 p., f. 793
By DOUGLAS YOUNG & Co. (at Ilford)
Ilford, Essex.—Ingleby-rd., &c., forty-nine plots of building land, f. (in lots) 5,939
October 7.—By F. PITTIS & SON (at Newport).
Newchurch, Isle of Wight.—Little Princelet Farm, 36 a. 1 r. 28 p., f. (in lots) 1,640
October 9.—By GARVEY & GOOK.
Bletchingley, Surrey.—White Hill, The Yews, and 2 a. 0 r. 18 p., f. 1,390
By WILLIAM HOUGHTON.
Walthamstow.—124 and 126, Boundary-rd., f. 1,105
57 to 63 (odd), Cambridge-rd., u.t. 69 yrs., g.r. 12*l.* 310
28, Gosport-rd., u.t. 80 yrs., g.r. 2*l.* 10s. 135
2A, Shernhall-st., and corner shop premises adjoining, f., r. 38*l.* 825
98 to 104 (even), St. Andrew's-rd., u.t. 60½ yrs., g.r. 8*l.* 450
By WHITE & SON.
Epsom, Surrey.—Burgh Heath-rd., Bruce Lodge, and 1 a. 3 r. 20 p., f. 2,500
Ockley, Surrey.—Oakdale and Littlebrooks, 130 a. 3 r. 19 p., f. 2,500
By FULLER, MOON, & FULLER.
Woodside, Surrey.—157 to 183 (odd), Portland-rd., u.t. 99 yrs., g.r. 70*l.* 2,800
October 10.—By DEBENHAM, TEWSON, & Co.
Holybourne, Hants.—The Shrubbery, and 5 a. 3 r. 7 p., f. and c. 1,900
Anerley.—6 and 8 Anerley Park, f. 1,510
October 11.—By H. DONALDSON & SON.
Dalston.—148 and 150, Sandringham-rd., u.t. 66½ yrs., g.r. 13*l.*, e.r. 76*l.* 755
34, Norfolk-rd., u.t. 61½ yrs., g.r. 6*l.*, r. 34*l.* 395
93, Forest-rd., u.t. 52 yrs., g.r. 9*l.*, r. 42*l.* 405
By E. W. RICHARDSON & SON.
Clerkenwell.—72, Great Percy-st., u.t. 12 yrs., g.r. 4*l.* 10s., e.r. 50*l.* 205
By J. A. TRYTHALL.
Selhurst.—81 to 91 (odd), Dagnall Park, f., r. 157*l.* 2,510
By DOUGLAS YOUNG & Co.
Ilford, Essex.—32, Northbrook-rd., u.t. 994 yrs., g.r. 7*l.* 18s., e.r. 38*l.* 350
68, 69, and 70, Ley-st., f., r. 125*l.* 1,520
By WYATT & SON (at Chichester).
Chichester, Sussex.—1 to 8, Victoria-ter., f. 1,255
October 12.—By ARBER, RUTTER, & Co.
South Lambeth.—Wandsworth-rd., the "Nottingham Castle" p.-h., i.g.r. 65*l.*, u.t. 33 yrs., g.r. 42*l.*, with reversion for one year 750
Hartington-rd., &c.—The "Lord Palmerston" p.-h., &c., i.g.r. 89*l.*, u.t. 33 yrs., g.r. 63*l.*, with reversion for one year 420
By PERCY MATTHEWS & MATTHEWS.
Kentish Town.—53 and 55, Lady Margaret-rd., u.t. 66 yrs., g.r. 8*l.*, e.r. 50*l.* 1,100
Hornsey.—The Grove, f.g.r.'s 23*l.*, reversion in 78 yrs. 595
Mount Pleasant-villas.—F.g.r.'s 28*l.* 10s., reversion in 76 yrs. 725
Paddington.—Kilburn-lane, a plot of building land, f. 360
By C. C. & T. MOORE.
Mile End.—3 to 9 (odd), Entick-st., f. 1,500
Wapping.—27, Great Hermitage-st., f. 425
Willesden.—8, 10, and 12, Mayo-rd., u.t. 83 yrs., g.r. 15*l.* 555
Stratford.—115, The Grove, f., e.r. 75*l.* 830
52, 54, and 56, Cedars-rd., f. 1,020
By THOMAS WOODS.
Hounslow, Middlesex.—St. Stephen's-rd., an enclosure of building land, f. 350
By STIMSON & SONS.
Herne Hill.—48 to 54 (even), Milton-rd., u.t. 68 yrs., g.r. 24*l.*, r. 124*l.* 1,230
Walworth.—198, Beresford-st., u.t. 50½ yrs., g.r. 4*l.* 305

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Erection of Free Library, &c.	Boro. of Royal Leamington Spa	J. M. Bottomley, 13, Bond-st. Leeds	Oct. 23
*Works of Sewering, &c.	U.D.C. of Bromley	Surv. Council Offices, Bromley, Kent	Oct. 24
*Kerbing, Tarpaving, &c. of Holdenby-road, Brockley	Lewisham B. of W.	Surv. Lewisham Town Hall, Catford, S.E.	do.
*Kerbing, Tarpaving, &c. of Hazeldon-road, Brockley	do.	do.	do.
*Kerbing, Tarpaving, &c. of Laleham road, Catford	do.	do.	do.
Workshops, Stores, &c. Polygon, Ardwick	Manchester Corp.	F. E. Hughes, Town Hall	do.
Well Sinking	Swinton U.D.C.	R. Fowler, C.E. Swinton, near Rotherham	do.
Street Works, King-street, &c.	Dover T.C.	H. E. Stilgoe, C.E. Town Hall	do.
Foundry and Shop, Dudley Hill Bradford	.....	S. Jackson & Son, Archt. Bradford	do.
Destructor	Gloucester Corp.	R. Hammond, C.E. 64, Victoria-st. S.W.	do.
Reservoir, West Hill	Hastings Corp.	P. H. Palmer, C.E. Town Hall	do.
Farm, Hubbert's Bridge, nr. Boston, Lincs	W. Ward	R. H. Hand, Archt. Double-st, Spalding	do.
Warehouse, Rose-grove, Manchester	L. & Y. Ry. Co.	R. C. Irwin, Hunt's Bank, Manchester	do.
Granite Setts	Belfast Corp.	J. C. Bretland, C.E. Town Hall	do.
Steel Rails (2,200 tons)	do.	do.	do.
Widening Cotford-lane, Cotford, near Taunton		J. Lodge, The Asylum, Cotford	Oct. 25
Steel Rails, &c.	Llanelly Harbour and Burry Navigation Commrs.	C. P. Fowler, C.E. Harbour Offices, Llanelly	do.
Cottage Homes, Penkhull	Stoke - upon - Trent Union	C. Lynam, Archt. Stoke-on-Trent	do.
Additions to Schools, Ponkey	Ruabon Sch. Bd.	J. Morison & Son, Archt. King-st. Wrexham	do.
Villa, Dunbar-st. Lossiemouth	.....	Reid & Wittet, Archt. Elgin	do.
Public Baths, Lowermoor	Oldham Corp.	S. A. Pickering, C.E. Town Hall	do.
Four Houses and Shops, Roundhay, Leeds	.....	C. Fowler, C.E. 24, Basinghall-st. Leeds	do.
House, Bolton-road, Bradford	.....	J. Cowgill, Archt. Market-st. Bradford	Oct. 26
Additions to Anvil Inn, Knottingley	Carter's Brewery Co. Ltd.	Tennant & Bagley, Archt. Pontefract	do.
Public Conveniences	Sandgate U.D.C.	A. R. Bowles, C.E. Council Offices	do.
Kerb and Channel Stones	Ulverston Corp.	H. Whition, Surv. Theatre-street	do.
Additions to Workhouse	Birmingham Union	W. H. Ward, Archt. Paradise-st. Birmingham	do.
Warehouse, Cross Hills, Halifax	.....	J. F. Walsh, Archt. L. & Y. Bank-chmbrs. Halifax	do.
Additions to Stores, Queen's-road	Halifax Indus. Soc.	M. Hall, Archt. 29, Northgate, Halifax	do.
Street Works, Albemarle-road, &c.	Withington U.D.C.	A. H. Mountain, C.E. Town Hall	do.
*Constructing Sewers	Wilmslow U.D.C.	J. Bowden, 14, Ridgefield, Manchester	do.
Additions to Rosehall, Keith, N.B.	W. Gordon	F. D. Robertson, Archt. 92, Mid-st. Keith	Oct. 27
House, Stables, &c. Alnmouth	.....	M. Temple Wilson, Archt. Alnwick	do.
Electricity Plant	Darwen (Lancs.) Corp.	Boro Engr. Town Hall	do.
*Excavating and Carting	St. Pancras Vestry	T. W. Aldwinckle, 1, Victoria-st. S.W.	do.
Road Works, Station-rd. Emsworth, Hants	Warblington U.D.C.	F. Swinburne, Surv. West-st. Emsworth	Oct. 28
Road Works, Kingshill-road, Upper Knowle, Bath	.....	Spackman & Son, 6, Terrace-walk, Bath	do.
Six Cottages, Sturry-road	Canterbury T.C.	City Surv. Tudor-chmbrs. Canterbury	do.
Flints	New Shoreham(Sussex) U.D.C.	J. E. Brown, Town Hall	do.
Houses, Ardmore Distillery, Kennethmont, N.B.	.....	C. C. Doig, Archt. Elgin	do.
*Erection of Manufacturing Premises	.....	O. P. Parsons, 14, Temple-st. Birmingham	do.
*Purchase & Clearing away of Certain Articles	Sch. Bd. for London	Contracts Sub. Dept. Sch. Bd. for London, Victoria Embankment, W.C.	Oct. 30
Foundries, Workshop, &c. Kingston, Halifax	.....	Jackson & Fox Archt. Rawson-st. Halifax	do.
Sewering, Frimley-rd.	Frimley U.D.C.	W. J. Hodgson, Surv. High-st. Camberley	do.
Making-up Charlwood-row, &c.	East Grinstead U.D.C.	R. Wilds, Surv. Council Offices	do.
*Supplying, Tarpaving, Materials, &c.	L.C.C.	Park's Dept. County Hall, Spring Gardens, S.W.	Oct. 31
School Buildings, Sandown	Brading Sch. Bd.	J. Newman, Thornton, Sandown	do.
Flagging, Paving, &c. Station-road, Silloth	Holme Cultram U.D.C.	G. Armstrong, Archt. 24, Bank-st. Carlisle	do.
Additions to School, Barry	Glam. C.C.	T. M. Franklen, County Offices, Westgate-street, Cardiff	do.
Road Works, Church-rd.	Altofts (Yorks.) U.D.C.	W. Wilkinson, Surv. Council Offices	do.
*Erection of Schools	Fletton R. Sch. Bd.	W. Boyer, 10A, Cowgate, Peterborough	do.
Excavations, Walls, &c. Hanbury Arms Hotel, Bargoed, Wales	.....	D. J. Lougher, Archt. Bank-chmbrs. Pontypool	Nov. 1
Alterations to Workhouse, Gayton, Norfolk	Freebridge Lynn Union	H. T. Tilson, Archt. Railway-rd. King's Lynn	do.
*New Boiler and Building Flues	Parish of St. Mary, Islington	W. Smith, 65, Chancery-lane, W.C.	Nov. 2
*Erection of Chimney Shaft, &c.	do.	do.	do.
Schools, Brecon	.....	J. H. Phillips, Archt. St. John's-chmbrs. Cardiff	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Chapel and School, St. Thomas-st Halifax	.....	M. Hall, Archt. 29, Northgate, Halifax	Nov. 2
Additions to Workhouse	Alresford Union	W. H. Hunt, Archt. Union Offices	do.
*Construction of Underground Lavatory	Boro. of Deal	T. C. Golder, 23, Queen-st. Deal	do.
*Supply and Delivery of Lamp Columns, &c.	St. Matthew, Bethnal Green Vestry	F. W. Barratt, Vestry Hall, Church - row, Bethnal Green	do.
*Erection of New Coastguard Buildings at Padstow	Works Dept. Admiralty	Works Dept. Admiralty, 21, Northumberland-av. W.C.	Nov. 3
*Erection of New Coastguard Buildings at Banff	do.	do.	do.
*Sinking and Steining of a Well, &c.	Faversham Water Wks.	B. Latham, 13, Victoria-st. Westminster	Nov. 4
Kerbing, Channelling, &c. 13 roads	Eastbourne Corp.	R. M. Gloyne, C.E. Town Hall	do.
Additions to School, nr. Walsall	Rushall Sch. Bd.	Bickton & Farmer, Archt. Bridge-st. Walsall	do.
*Certain Works of Sewerage, &c.	Hendon U.D.C.	S. S. Grimley, Public Offices, Hendon, N.W.	Nov. 6
*Supply of Fine Crushed Thames Shingle	Parish of Paddington	Surv. Office, Vestry Hall, Harrow-rd. W.	do.
*Supply of Vans and Carts	Parish of St. Mary Magdalen, Bermondsey	R. J. Angel, Town Hall, Spa-rd S.E.	do.
*Painting and Decorating Town Hall	Bermondsey Vestry	Surv. Town Hall, Bermondsey, S.E.	do.
*Erection of New School Buildings	Walthamstow Sch. Bd.	W. A. Lonsmore, 7, Great Alie-st. E.	Nov. 7
*Completion of Post Office	H.M. Works	H. M. Office of Works, Custom House, Liverpool	do.
*Laying of Fireproof Floor	Hastings Union	Jeffery & Hillier, 5, Havelock-rd. Hastings	Nov. 9
Drainage Works	Kinsciere R.D.C.	J. Barnes, Council Offices	Nov. 11
Market, Halford-st.	Leicester Corp.	W. Brand, Archt. 16, Bishop-st. Leicester	Nov. 13
*Erecting New Tramp Wards, &c.	Westbury - on - Severn Union	W. F. Jones, 21, George-st Gloucester	do.
*Erecting Public Library	Woolwich Local Bd. of Health	Church, Quick, & Whinsop, William-st. Woolwich	Nov. 14
*Erection of New School Buildings	Rhyl & District Intermediate Sch.	F. H. Shayler, Belvoir House, Shrewsbury	Nov. 15
Destructor, Daisyfield	Blackburn Corp.	W. Stubbs, Eugr. Town Hall	do.
*Construction of Sewers, &c.	Morecambe U.D.C.	Bessley, Son, & Nicholls, 11, Victoria-st. S.W.	do.
Schools, Rhyl, N. Wales	Governors	F. H. Shaylor, Archt Belvoir House, Shrewsbury	do.
*Erection and Completion of New Workhouse Infirmary	Southampton Incorporation	W. A. Mitchell, Son, & Guthridge, 9, Portland-st. Southampton	Nov. 20
Brick Warehouse, Pack Horse-yard, Burnley	Misses Harker	G. B. Rawcliffe, archt. 5, Nicholas-st. Burnley	No date
Waterworks	Newport (Salop) R.D.C.	W. Wyatt, engr. Bryndwr, All Saints,' Shrewsbury	do.
Additions to Premises, The Grove, Ilkley	.....	Empsall & Clarkson, archts. 7, Exchange, Bradford	do.
Steel Girder	Middlesbrough Corp.	D. Terrace, Gasworks, Middlesbrough	do.
Sewers, Wilmslow	.....	J. Bowden, C.E. 14, Ridgefield, Manchester	do.
Alterations to Premises, Lichfield-rd.	Stafford Laundry Co. Ltd.	Mr. Goodchild, Hazeldene, Stafford	do.
Club Premises, Shipley	.....	J. Jackson, archt. Barry-street, Bradford	do.
Houses, Bruce-grove, Tottenham	.....	S. Ford, archt. 3, South-sq Gray's Inn, W.C.	do.
House, Preesall	.....	J. Lawrenson, 41, London-street, Fleetwood	do.
District Offices, Hamilton, N.B.	.....	A. Cullen, archt. Brandon chambers, Hamilton	do.
Concert Hall, West End Market, Morecambe	.....	H. Howarth, archt. 7, Regent-rd. Morecambe	do.
Business Premises, Claypit - lane, Leeds	H. Clarkson	Butler, Wilson, & Co. archts 12, East-parade, Leeds	do.
Wesleyan Chapel, Radyr, near Cardiff	Trustees	Jones & Co. archts. 18, St. Mary-street, Cardiff	do.
Asphalte Paving Works	Mexico City Authorities	Foreign Office, Downing-street, S.W.	do.
Engineers' Works, Castleton, Lancs.	D. Bridge & Co.	T. Townsend, Junr. district Bank-chambers, Rochdale	do.
Business Premises, Dundrum, Co. Down	.....	J. J. M'Donnell, archt. 27, Chichester-st. Belfast	do.
Flagging	Tynemouth Corp.	J. F. Smillie, boro surv. Town Hall	do.
Iron Slag	do.	do.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Junior Assistant	Cnty. Boro. of Sunderland	2l. per week	Oct. 24
*Assistant Surveyor	Vestry of St. George The Martyr, Southwark	2l. 10s. per week	Oct. 26
*Clerk of Works	Boro. of Leicester	3l. 3s. per week	do.
*Junior Draughtsman	Acton D.C.		No date
*Quantity Surveyor's Assistant	L.C.C.	4l. per week	do.
*Draughtsmen	L.B. & S. Coast Rly.		do.

Those marked with an asterisk (*) are advertised in this Number. ***Competitions*, p. —.** ***Contracts*, pp. iv. vi. viii. x. & xix.** ***Public Appointments*, pp. xvi. xvii. & xix.**

Kennington.—30 and 31, De Laune-st., u.t. 65 yrs., g.r. 12*l.* £835
24, Sharsted-st., u.t. 65 yrs., g.r. 6*l.*, e.r. 40*l.* .. 410
Sydenham.—18 and 20, Knighton Park-rd., f., r. 58*l.* 890
Clapham.—23, Hetherington-rd., u.t. 67 yrs., g.r. 8*l.* 10s., r. 30*l.* 300
Cheshunt, Herts.—Church Gate, Pevensey and Hillside, u.t. 96 yrs., g.r. 9*l.* 10s., e.r. 60*l.* 500
Manor Park.—25 and 27, Carlyle-rd., f., e.r. 60*l.* .. 750

By NEWBON, EDWARDS, & SHEPHARD.

Clerkenwell.—72 and 74, Myddelton-st., u.t. 12 yrs., g.r. 35*l.*, r. 125*l.* 390
Hoxton.—131, Hoxton-st., f., r. 50*l.* 925
Hackney.—130 and 132, Hackney-rd., f., r. 95*l.* .. 1,615
Islington.—7, Colebrooke-row, f., e.r. 75*l.* 1,370
Kentish Town.—108, Gaisford-st., u.t. 50 yrs., g.r., &c., 3*l.* 7s., r. 50*l.* 640
Battersea.—18, Marmion-rd., u.t. 71 yrs., g.r. 7*l.* 10s., r. 36*l.* 340
Enfield.—Upper Chase Green-av., Glenthorne and Shynewood, f., r. 152*l.* £2,125

By WILKINSON, SON, & WELCH (at Brighton).

Brighton.—107, Western-rd., f., r. 120*l.* 3,270
Western-rd., f.g.r. 19*l.* 10s., reversion in 32 yrs. 1,010
29 and 29A, King's-rd., f., r. 420*l.* 8,400

October 13.—By DAVID BURNETT & CO.

Wood Green.—Cairo-ter., f.g.r. 39*l.*, reversion in 99 yrs. 1,110
Tottenham.—Bruce-villas, f.g.r. 37*l.* 16s., reversion in 99 yrs. 1,060

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **e.r.** for estimated rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **yd.** for yard, &c.

TO CORRESPONDENTS.

T. V. H. D. (Amounts should have been stated.)—S. C. B. (It is a legal question which we cannot undertake to advise on. It may depend partly on local by-laws.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BARNET.—For the construction of pipe sewers, together with ventilating shafts, screening chambers, and outfall works, for the Barnet Rural District Council. Mr. W. H. Mansbridge, C.E., engineer :—

Clift Ford, Harlesden* £4,500

BARNSLEY.—For the execution of street works, King-street, Sykes-street, &c., Hoyland, for the Urban District Council. Mr. Wm. Farrington, C.E., Town Hall, Hoyland, near Barnsley :—

Burrows & Sons, Barnsley* £880

BARNSTAPLE.—For rebuilding business premises, Castle-street, for Messrs. Bentley. Mr. Arnold Thorne, architect :—

Woolaway & Sons	£1,142 0	Tucker & Sons ..	£910 0
Sanders & Ridge	1,059 17	T. Barwick.....	890 0
Sillifant & Slee ..	1,051 7	H. Burgess, Bear-st., Barnstaple*	860 0
E. Karslake	986 0		
Garland Bros.....	979 0		

[All of Barnstaple.]

BARNSTAPLE.—For building stores, &c., for Mr. W. Pugsley, Bear-street, Barnstaple. Mr. Arnold Thorne, architect :—

Garland Bros.....	£420	Tucker & Sons	£388
E. Kerslake	390	H. Burgess	380
R. Ridge	390	Pearce Bros., Newport*	350

BIRMINGHAM.—For the erection of new depôt, public offices, &c., Stratford-road, Sparkhill, for the Yardley Rural District Council. Mr. Arthur Harrison, architect, Queen Chambers, Colmore-row, Birmingham. Quantities by Mr. Anthony Rowse, 3, Newhall-street, Birmingham :—

Harley & Son	£11,545	Whitehouse & Sons	£10,986
Moffat & Sons	11,380	Whittall & Son	10,860
R. Fenwick	11,095	F. Davis	10,782
F. J. Briley.....	11,085	W. Bishop, King's Heath*.....	10,687
Bowen & Sons	11,065		
H. Gibbs.....	11,029		

BURTON-ON-TRENT.—For the erection of No. 2 block of artisans' dwellings, for the Burton-on-Trent Artisans' Dwellings Company, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

Henry Edwards* £3,937 10

CONSETT (Co. Durham).—For the execution of street works, Hawthorn-street, &c., for the Urban District Council. Mr. W. S. Shell, surveyor, Parliament-street, Consett :—

J. G. Bradley ..	£256 15 9	G. J. Christopher, Black Hill* ..	£212 17 1
T. Hogg	240 9 7		
Walker Bros. ..	215 12 5		

DORCHESTER (Dorset).—For building new banking and business premises, for the Devon and Cornwall Banking Company, Limited. Mr. A. L. T. Tilley, architect, 26, South-street, Dorchester :—

S. Horsey, Dorchester and Bournemouth* £6,479

DUDLEY.—For forming, kerbing, &c., new streets on the Buffery Estate. Mr. John Gammage, Borough Surveyor, Town Hall, Dudley :—

Hughes & Son, Lower Gornal* £1,075

[Borough Surveyor's estimate .... £1,086]

GREAT YARMOUTH.—For the erection of a mariners' chapel, institute, and house, for the British and Foreign Sailors' Society. Messrs. Bottle & Olley, architects, Great Yarmouth :—

For the Whole of the Works, Exclusive of Plumber, Painter, Gas, Heating, &c.

J. S. Cooper	£2,947 16	J. D. Harman ..	£2,463 0
Tice & Nicholls	2,930 0	Carter & Wright	2,433 0
J. Moore.....	2,895 0	S. F. Smith.....	2,387 0
J. Ward	2,630 0	G. W. Beech	2,310 0
H. Wall	2,542 5	F. Grimble*	2,299 0
J. S. Read	2,490 0		

[All of Great Yarmouth.]

Plumber, Painter, and Glazier.

Lake & Burrell	£349 0 0	R. A. Eastoe ..	£297 7 6
R. H. Tooley ..	307 18 0	J. E. Dyson ..	297 0 0
J. Atherton	300 0 0	J. W. Gooda* ..	287 18 0

[All of Great Yarmouth.]

HARROW.—For formation of road, and metalling same, for the Harrow Land Company, Limited :—

Clift Ford, Harlesden,* as per schedule of prices.

HARROW.—For the construction of about 3,000 ft. pipe sewer, together with manholes, lampholes, and other works, at Hindes-road, Harrow. Mr. E. Lines, C.E., surveyor :—

Clift Ford, Harlesden* £1,389

HARROW.—For the construction of pipe sewers, together with manholes, lampholes, and other works, at Northolt-road, Harrow. Mr. E. Lines, C.E., surveyor :—

Clift Ford, Harlesden* £156

LEEDS.—For the erection of thirteen through houses, Ivy House Estate, York-road, for Mr. Wm. Byrom. Mr. J. W. Thackray, architect, 14, Infirmary-street, Leeds :—

Brick and Stone Work.—J. Pickard ..
Joinery.—M. Eland .....
Plastering.—McKay Bros. ..... } £2,485 10
Plumbing.—Gibson & Son.....
Slating.—Atkinson & Son .....
Painting.—Roylance & Horsman ....

[All of Leeds.]

WEMBLEY.—For the supply of broken granite and slag, 1899-1900, for Wembley Urban District Council. Mr. C. R. W. Chapman, C.E., Council Offices, Wembley :—

	Sudbury and Wembley Station (L.&N.W.Ry.).		Wembley Park Station (Met. Ry.).		Hendon (Met. Ry.).		Harrow (Met. Ry.).	
	1¾ in. s. d.	2 in. s. d.	1¾ in. s. d.	2 in. s. d.	1¾ in. s. d.	2 in. s. d.	1¾ in. s. d.	2 in. s. d.
Montsorrel Granite Company	11 9	11 3	11 9	11 3	11 9	11 3	11 9	11 3
Stony Stanton	13 0	11 0	11 3	11 0	11 3	11 0	11 3	11 0
Wainwright & Co. (basalt)	12 6	12 6	12 0	12 0	13 11	13 11	12 3	12 3
Lyon & Co.	12 10	12 8	—	—	12 8	12 6	—	—
L. Sommerfeld	12 7	12 6	12 7	12 6	12 7	12 6	12 7	12 6
Wm. Griffiths, Guernsey	15 1	14 7	—	—	14 1	13 7	—	—
,, (London Stock)*	—	10 7	—	—	—	9 7	—	—
Cliffe Hill	11 8	11 5	11 8	11 5	11 5	11 2	11 5	11 2
Mendip Company	10 9	10 3	11 1	10 9	11 2	10 8	11 2	10 8
Enderby & S.S.	11 0	10 9	11 0	10 9	11 0	10 9	11 0	10 9
Basalt Stone Company	13 0	13 0	13 0	13 0	13 9	13 9	13 9	13 9
A. G. Hughes (rag).....	11 2	10 8	11 9	11 3	10 8	10 2	12 2	11 8
Murray & Co.	10 7	10 6	10 7	10 6	10 10	10 9	10 7	10 6
Whitwick Company*	10 7	10 7	10 7	10 7	10 10	10 10	10 7	10 7
Manuelle	10 11	10 8	10 11	10 8	10 11	10 8	10 11	10 8
Van Praagh	11 3	11 3	11 3	11 3	11 9	11 9	11 3	11 3
SLAG.								
L. Sommerfeld.....	7 9	7 9	8 0	8 0	7 9	7 9	8 0	8 0
Grimley & Son*	7 7	7 7	7 7	7 7	7 5	7 5	7 9	7 9
Islip Iron Company	8 3	8 1	8 5	8 3	8 2	8 0	8 5	8 3
HOGGIN.								
J. A Pratt	—	—	—	—	5 1	—	—	—
Haynes	4 9	—	5 6	—	—	—	—	—
Tansley*.....	—	—	—	—	4 6	—	—	—
J. A Pratt*	—	—	4 8	—	—	—	—	—
G. Thorn*	4 0	—	—	—	—	—	—	—

LONDON.—For the construction of roads and sewers, surface water-drain, manholes, ventilating shafts, and other work, on the Roundwood Park Estate, Willesden. Messrs. Grant, Brown, & Humphries, surveyors :—

Clift Ford, Harlesden* £3,600

LONDON.—For works at Brosash-road, Clapham Common Estate. Mr. W. N. Dunn, architect, Bucklersbury, E.C. :—

Griffiths.....	£1,850	Lawrence & Thacker	£1,200
Iles.....	1,547	Ford	1,029
Adams	1,499	Blackmore.....	977
Bentham & Co.	1,294	Carpenter*	965
Soan	1,263	Swaker	830
Wimpey	1,260		

LONDON.—For rebuilding Nos. 416, 418, and 420, Holloway-road, N., for Messrs. E. Hart & Co. Messrs. William Eve & Sons, architects :—

General Work (exclusive of Ironwork).

Harris & Wardrop ..	£4,180	Patman & Fotheringham, Ltd.....	£3,821
Sheffield Bros.....	4,097	Ward & Lamble	3,755
Holliday & Greenwood	3,897	W. Shurmur.....	3,728
McCormick & Sons..	3,889	Chessum & Sons* ..	3,618
Johnson & Co., Ltd.	3,877		

Constructional Ironwork.

Whitford & Co.	£1,798 0 0	Shaw & Co., Ltd.....	£1,659 0 0
Moreland & Son, Ltd.....	1,700 0 0	Williams & Co.	1,492 18 0
		Drew, Bear, Perks, & Co.*	1,429 7 1

LONDON.—For extension of platform at Kilburn Depôt, for Messrs. Carter, Paterson, & Co., Limited. Messrs. William Eve & Sons, architects :—

Watts, Johnson, & Co.	£524	Chessum & Sons	£375
Harris & Wardrop....	389	H. Brown, Stoke Newington*	369

LONDON.—For rebuilding Nos. 6 and 8, Pear Tree-street, Goswell-road, as an extension of Gordon's Distillery, for Messrs. Tanqueray, Gordon, & Co., Limited. Messrs. William Eve & Sons, architects :—

J. R. Long..... £586
H. Brown, Stoke Newington*..... 449

LONDON.—For extension of laundry at Alric-avenue, Stonebridge Park, Willesden, N.W., for the White Heather Laundry. Messrs. William Eve & Sons, architects :—

Meach	£3,533 3 4	Hayworth & Son	£3,220 0 0
W. Shurmur..	3,420 0 0	G. Wiggs	3,134 0 0
Killby & Gayford.....	3,310 0 0	Patman & Fotheringham, Limited* ..	3,091 0 0
Sheffield Bros.	3,242 0 0		

LONDON.—For the construction of new roads and sewers on the Dudding Hill Estate, Willesden, N.W. Mr. Richard Parry, engineer and surveyor, 27, Great George-street, Westminster, S.W. :—

Nowell & Robson	£20,955 16 3
Killingback & Co., Ltd.	18,142 2 4
Thos. Adams	17,487 5 3
James Pizzey	16,837 0 0
Neave & Son	16,812 0 0
Jackson & Son, Ltd.....	16,568 14 6
R. Ballard, Ltd.....	16,247 0 0
Wimpey & Co.	15,646 0 0

LONDON.—For rebuilding the Christian Union Almshouses, John-street, Edgware-road, W., for the Committee. Mr. Eustace Corrie Frere, architect, 29, Lincoln's Inn-fields. Quantities supplied :—

J. Christie.....	£6,100	F. T. Chinchen	£5,482
Kingerlee & Son....	6,054		

LONDON.—For stabling at Duke-street, Bishopsgate, E.C. Mr. Fredk. W. Foster, architect, 41, Bedford-row, W.C. Quantities by Mr. J. F. Bull, 30, Bedford-row, W.C. :—

Bush	£3,858	Whitehead.....	£3,625
Woodrow	3,780	Courtney	3,567
Lupthorne.....	3,647		

LONDON.—For works in extending the sewage farm, Wembley, laying pipes, forming carriers, and levelling ground. Mr. H. Howard Humphreys, engineer :—

Clift Ford, Harlesden,* as per schedule.

OLD HILL (Staffs.),—For forming, metalling, kerbing, &c., John-street, Blackheath, for the Rowley Regis Urban District Council. Mr. W. H. Brettell, Council Offices, Old Hill, Staffs. :—

W. Willetts, Old Hill, Staffs.* £356 3 5

REIGATE.—For making roads, laying sewers, &c., Cronk's Hill Estate. Messrs. G. E. Pym & Son, architects and surveyors, 97, Dood's-road, Reigate :—

Bentham & Co.....	£2,574 0 0	G. S. Faulker	£1,955 0 0
Wm. Wadey..	2,375 10 0	M. S. Ketteringham	1,800 0 0
S. Kavanagh	2,186 0 0	Streeter, Godalming* ..	1,749 15 0
George Bell ..	1,963 0 0	Pitt & Son....	1,639 19 5

SHADWELL.—For alterations and additions to The Mansion, Shadwell Court, near Thetford, Norfolk. Mr. H. J. Green, architect, 31, Castle Meadow, Norwich :—

Waring & Sons	£13,743 18 5	Gillow & Co.†	£11,109 8 1
Youngs & Son	11,956 0 0	Shillitoe & Sons	10 891 18 9

SHARDLOW (Derbyshire).—For the execution of street works, Randolph-road, &c., Normanton, for the Rural District Council. Mr. T. A. Fuller, surveyor, The College, All Saints', Derby. Quantities supplied :—

J. Tomlinson..	£1,420 10 4	G. F. Tomlinson, Derby*	£707 0 0
Thraves & Son	943 2 4		
W. Corden....	820 7 0		

SURBITON.—For Ewell, Kingsdown, and Ditton roads Improvement, for the Urban District Council. Mr. S. Mather, C.E., Council Offices, Surbiton :—

S. Atkins	£2,550 0	S. Kavanagh	£2,030 0
J. Macklin	2,292 15	J. Nicholas, Tolworth, Surbiton*	1,887 12
Killingback & Co.	2,100 0		

Surface Water Drain, Ditton-road.

J. Macklin.....	£489 15 0	A. C. Soan	£332 10 0
Killingback & Co.....	370 0 0	S. Kavanagh ..	283 19 8
S. Atkins	350 0 0	J. Nicholas, Tolworth, Surbiton*	276 17 0

WATFORD.—For the erection and completion of a school in two departments (620 mixed, and 452 infants), at Judge-street, for the Watford School Board. Mr. W. H. Syme, architect, Watford :—

Mead & Burton	£16,739	Eames	£14,950
Wilson	15,923	Waterman	14,844
King.....	15,747	Wiggs	14,228
Brown	15,590	Brightman	13,860
Dupont.....	15,550	Jackson	13,828
Turner, Ltd.	15,387	Lewin	13,800
Tonge	15,040	Judge, Watford* ..	13,700

WESTBURY-ON-TRYM.—For the execution o sewage-disposal works for the Barton Regis Rural District Council. Mr. A. P. I. Cotterell, C.E., Lonsdale Chambers, 7, Baldwin-street, Bristol :—

Geo. Bell	£9,052 1 0
H. W. Weldon, Birmingham	8,952 9 4

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's architect :—

HARPER-STREET.—Improvements: Providing halls for all departments, with drawing class-room over girls' hall; new staircases for boys and girls; cloak-rooms and lavatories, teachers' rooms and stock-rooms for all departments; re-arranging, re-lighting, and re-stepping existing class-rooms; providing new furnace-room and heating apparatus. Revised accommodation: boys, 336; girls, 336; infants, 330; total, 1,002, net loss of 171 places :—

Wallis & Sons	£14,395	Lawrance & Sons ..	£12,573
J. Carmichael	13,423	J. Marsland	12,315
T. L. Green	13,322	W. Smith.....	12,089
F. & H. F. Higgs..	13,255	W. Downs*.....	11,550

[*See also next page.*

CASSLAND-ROAD.—Higher grade mixed school, four stories, containing two halls, one on ground floor and one on first floor, each having an area of about 1,700 super ft.; accommodation of class-rooms calculated on the recognised seat basis. *Ground floor.*—Two class-rooms of 48, one class-room of 40, one class-room of 50; and manual training centre, containing an area of 1,436·6 super ft. *First floor.*—Three class-rooms of 48, three class-rooms 40, one class-room 50. *Second floor.*—Three class-rooms of 48, two class-rooms 56, one class-room 50, gymnasium, area 1,728 super ft., with dressing-rooms and store for gymnastic apparatus. *Third floor.*—Chemical laboratory, area 1,257 super ft., with balance-room; physical laboratory, area 662 super ft., with dark room and stores for chemicals; lecture-room, area 662 super ft.; drawing class-room, area 1,367 super ft.; clay modelling-room, area 551 super ft.; needlework-room, area 547 super ft. Total accommodation, 806. Propulsion system of heating and ventilation; covered playgrounds for boys and girls. Area of playgrounds:—Girls, 10,290 super ft.=26 ft. per scholar; boys, 9,610 super ft.=24 ft. per scholar:—

		‡
Scrivener & Co.	£33,634	+ £419
Perry & Co.	33,516	+ 421
Chessum & Sons	33 370	+ 385
Miskin & Sons	33,340	+ 366
Munday & Sons	33,235	+ 410
Kirk & Randall	32,806	+ 361
Grover & Son	32,749	+ 390
T. L. Green	32,585	+ 410
J. & M. Patrick	32,149	+ 303
Lawrance & Sons	32 022	+ 367
Williams & Son	31,971	+ 306
L. H. & R. Roberts	31,934	+ 299
W. M. Dabbs	31,890	+ 288
C. Cox*	31,434	+ 291

‡ If walls of class-rooms and halls are plastered add.

GAINSBOROUGH-ROAD. — Providing and fixing glazed partitions to divide rooms A and EF in boys' department, room EF in girls' department, and room A in infants' department:—

J. Haydon	£625	W. Martin	£274
F. Britton	320	Spencer & Co.*	233
Wake & Dean, Ltd.	275		

HIGHWAY.—Reconstructing boiler flue:—

J. F. Holliday	£550 0	Gibb & Co.	£165 0
Munday & Sons	278 0	Rockhill Bros.*	123 10
G. Barker	175 0		

NEW PARK-ROAD.—Housewifery centre:—
SMALLWOOD-ROAD.— ,, ,,
SWAFFIELD-ROAD.— ,, ,,

	New Park-road.	Smallwood-road.	Swaffield-road.
Wall & Co.	£1,410	£1,398	£1,386
Holloway Bros.	—	1,399	1,399
Parsons & Co.	1,391	1,379	1,376
Johnson & Co., Ltd.	1,380	1,314	1,310
Stimpson & Co.	1,355	1,353	1,350
E. Triggs	1,292	1,294	1,281
Martin, Wells, & Co.	1,279	1,295	1,269
Lathey Bros.*	1,263	1,253	1,254

SCARSDALE-ROAD.—Improvements: adapting and enlarging existing class-rooms to form halls for each department; providing two new class-rooms on each floor, one for forty and one for fifty; altering existing entrance steps, boys' and girls'; providing additional outside flight of steps for girls and providing new entrance; forming new communication door in boundary wall and bricking up existing door:—

Johnson & Co.	£4,520 10	J. Appleby	£3,683 0
Staines & Son	4,434 0	Bulled & Co.	3,639 0
Garrett & Son	3,990 0	White & Co.	3,613 0
Edwards & Medway	3,977 0	J. & C. Bowyer	3,559 0
Smith & Sons, Ltd.	3,694 0	Lathey Bros.*	3,555 0

SHEPPERTON-ROAD.—For rebuilding the boys', girls', and infants' offices further away from the school building, in order to allow of the provision of halls should they be required; new closet on ground floor for female teachers, and providing new drainage scheme, with the exception of the schoolkeeper's house:—

Munday & Sons	£2,470	Johnson & Co.	£2,395
L. H. & R. Roberts	2,465	Williams & Son	2,350
Falkner & Sons	2,453	Killingback & Co.	1,964
Lawrance & Sons	2,398	F. Bull*	1,911

THOMAS-STREET.—(Infants')—Providing and fixing sliding glazed partitions to divide rooms A and B so as to form three rooms, and providing a skylight. (Girls')—Providing and fixing partitions to divide each of the two large rooms into three rooms, and providing skylight:—

Lawrance & Sons	£1,055 0 0	Bruce, Croom, & Co.	£639 5 6
Munday & Sons	1,027 0 0	B.E. Nightingale	627 0 0
S. H. Corfield	960 0 0	Wake & Dean, Ltd.	610 0 0
G. Barker	920 0 0	Barrett & Power*	590 0 0
F. Britton	860 0 0		

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Kite & Co.	4	6
Cannon & Sons	3	9
Defries & Sons, Limited	3	3
Harvey & Co.	3	0
Duffield & Co.	2	6
Stevens & Sons	2	3
G. Davis	2	0
Wenham & Waters, Limited	1	11
Ewart & Son	1	9
R. H. & J. Pearson, Limited*	1	9

* Recommended for acceptance.

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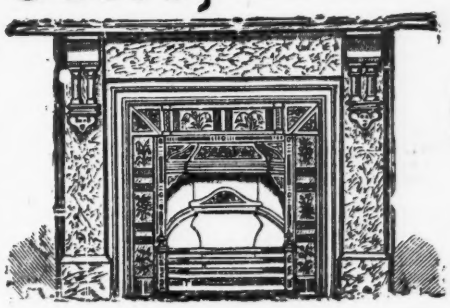

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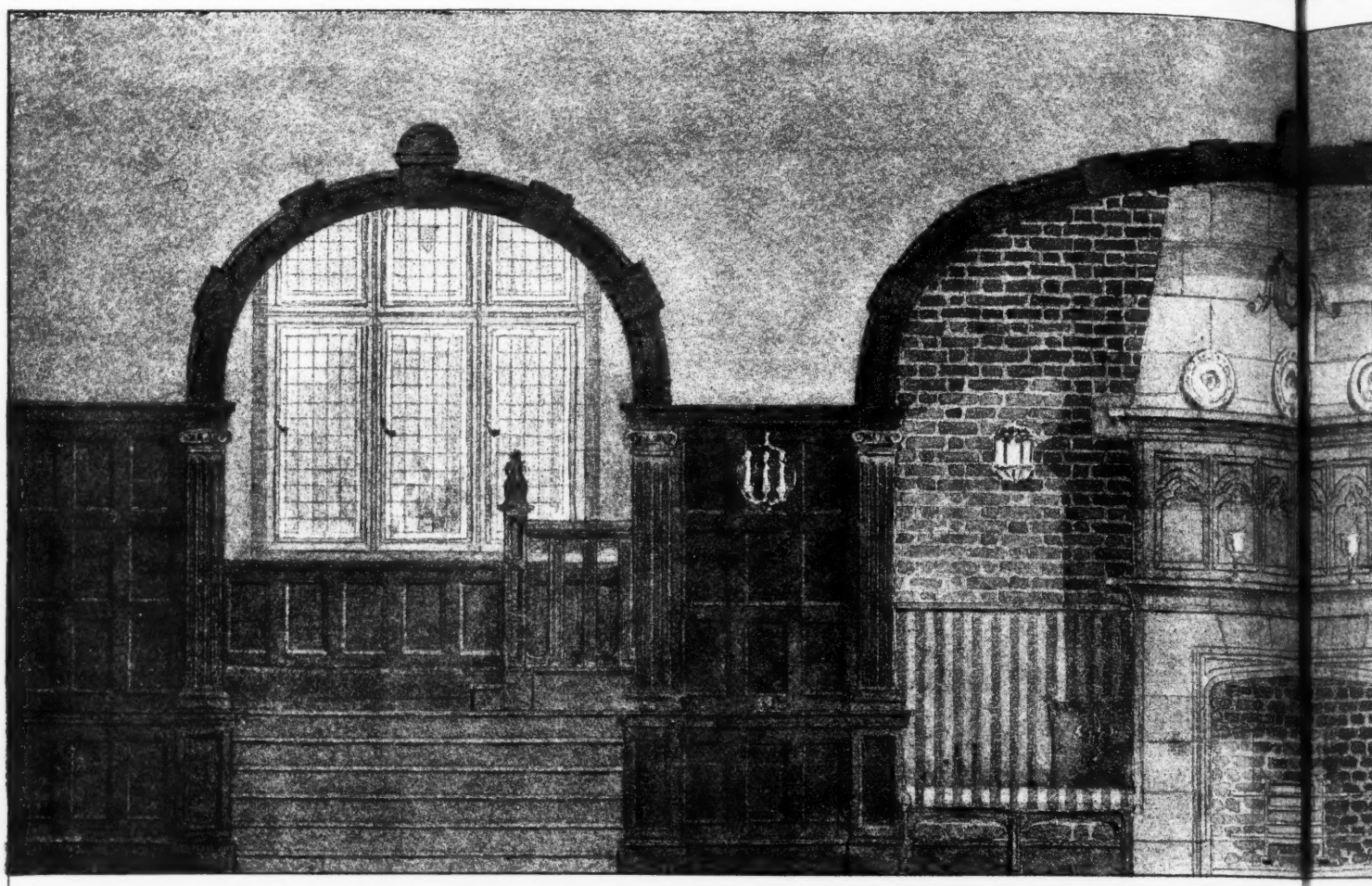

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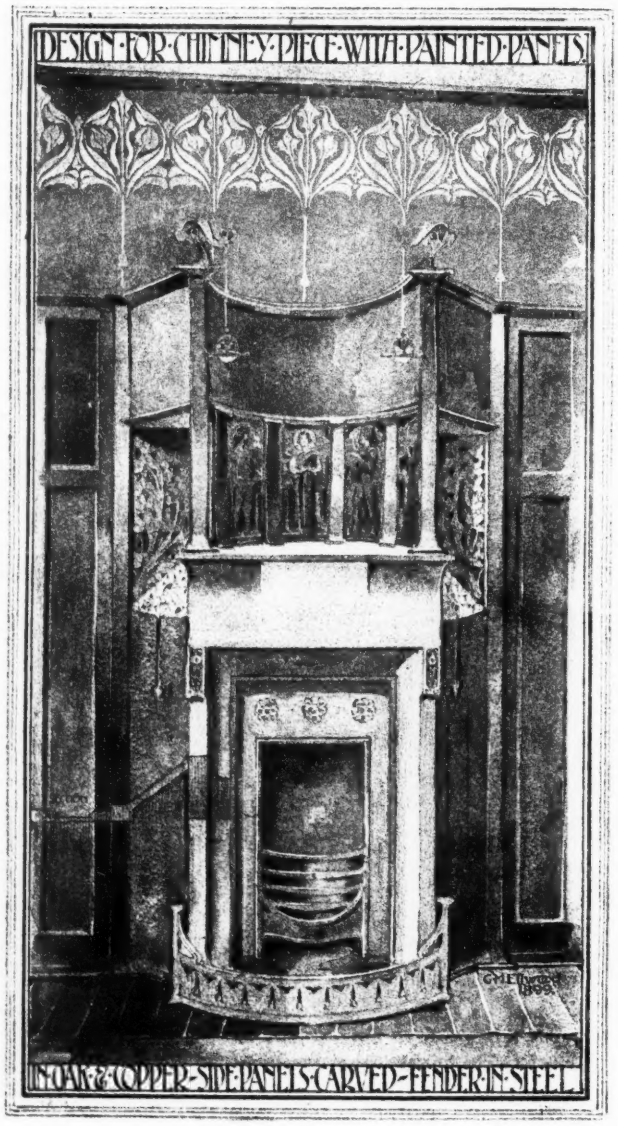

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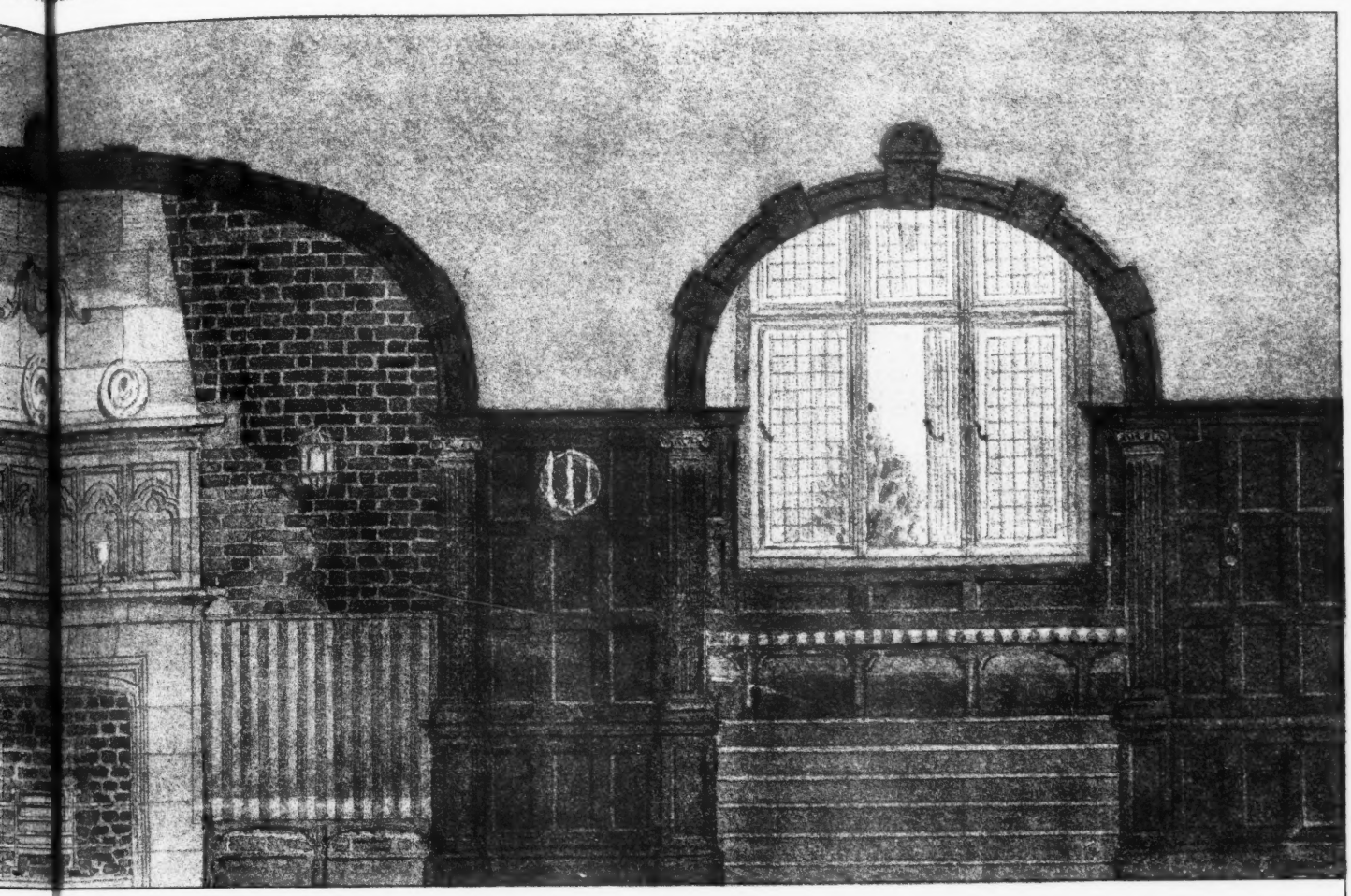

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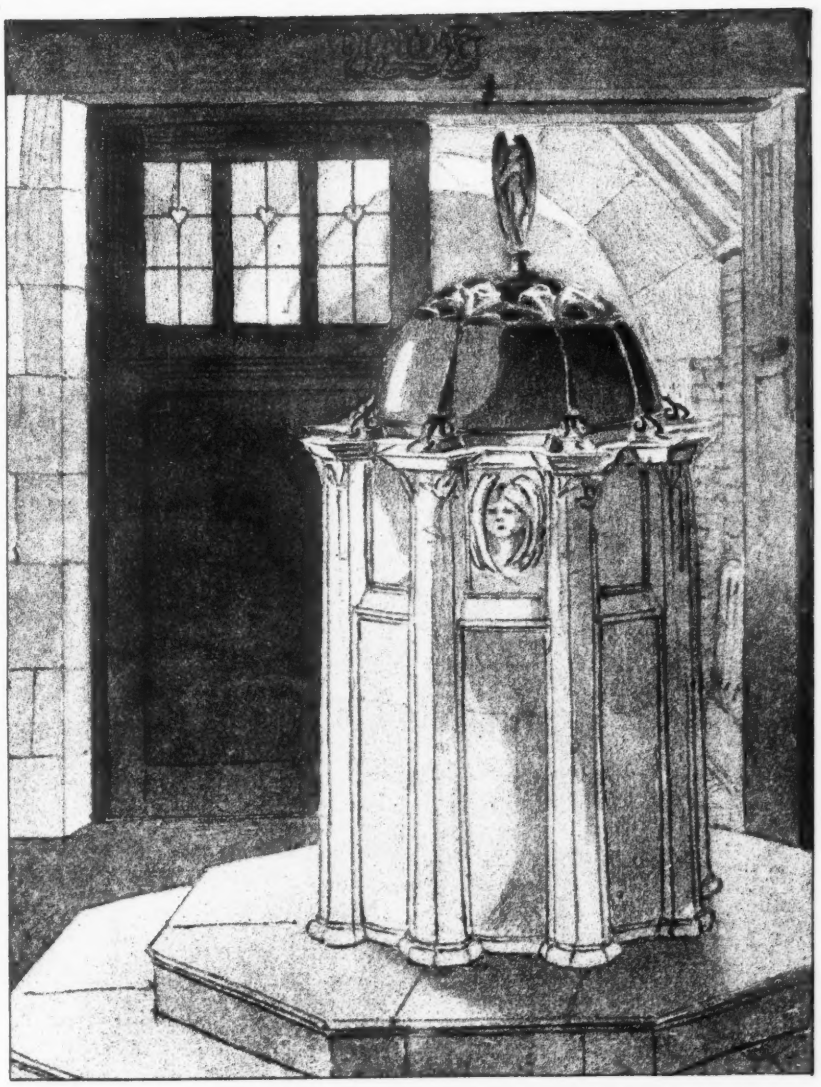

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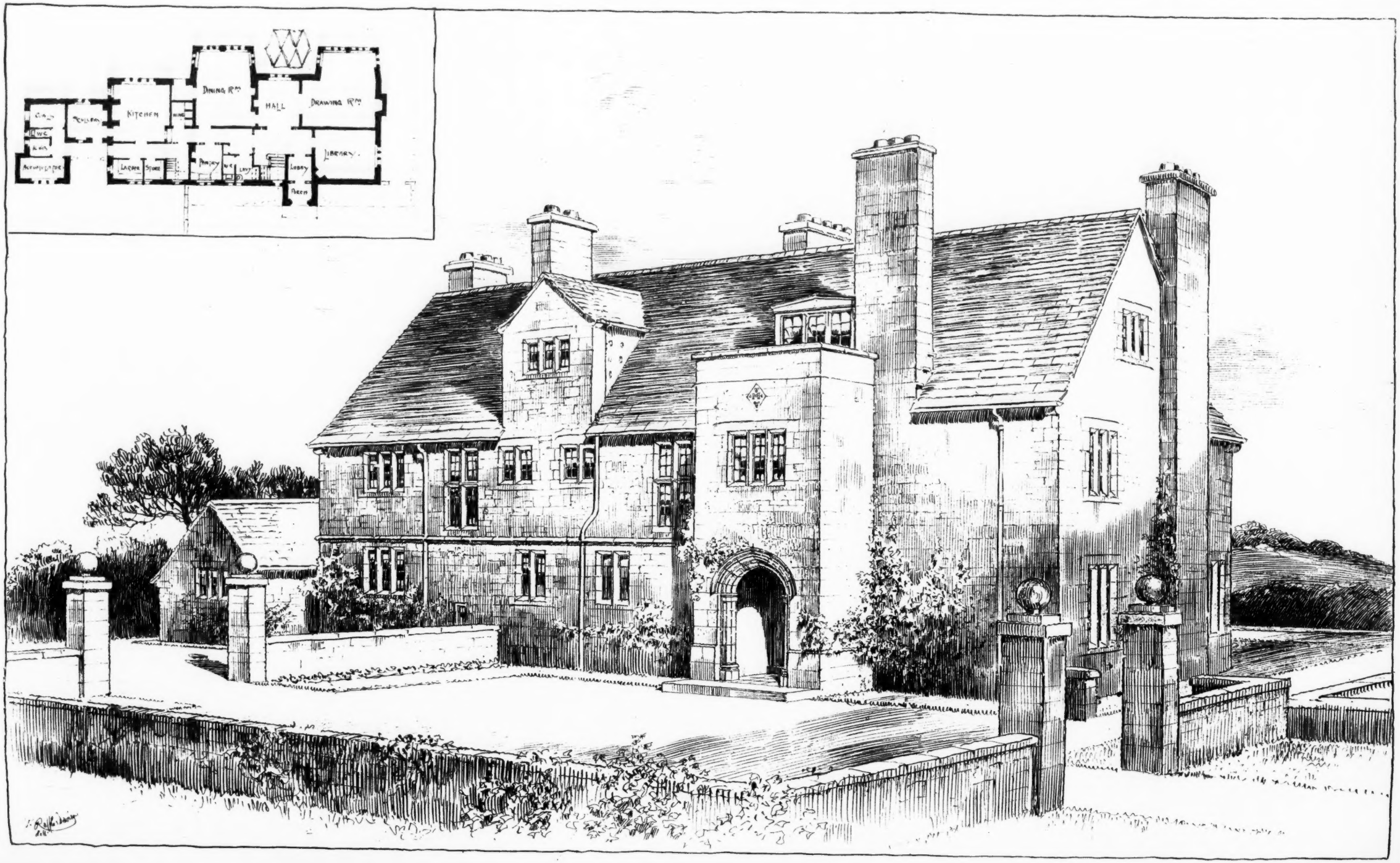

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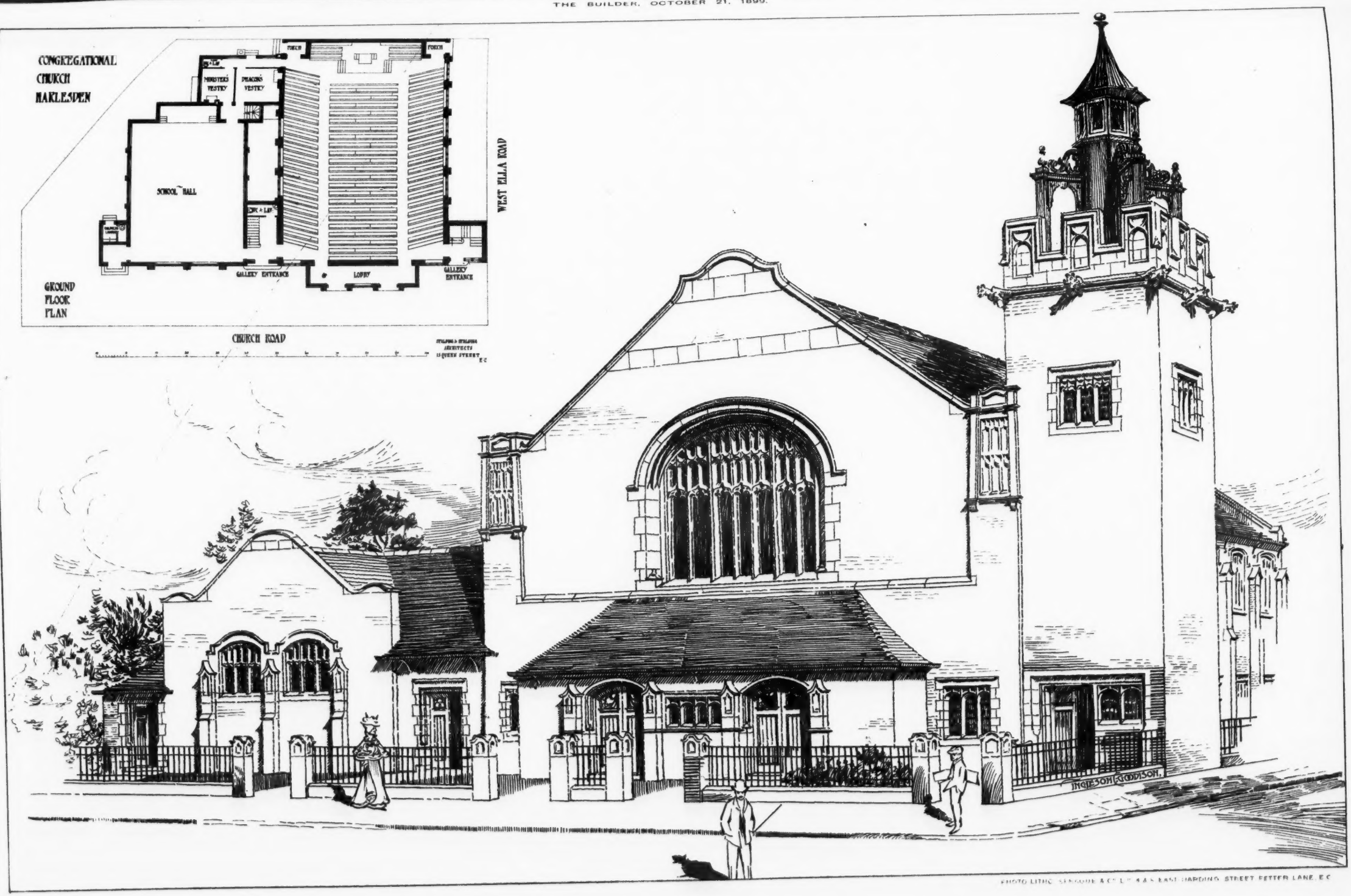

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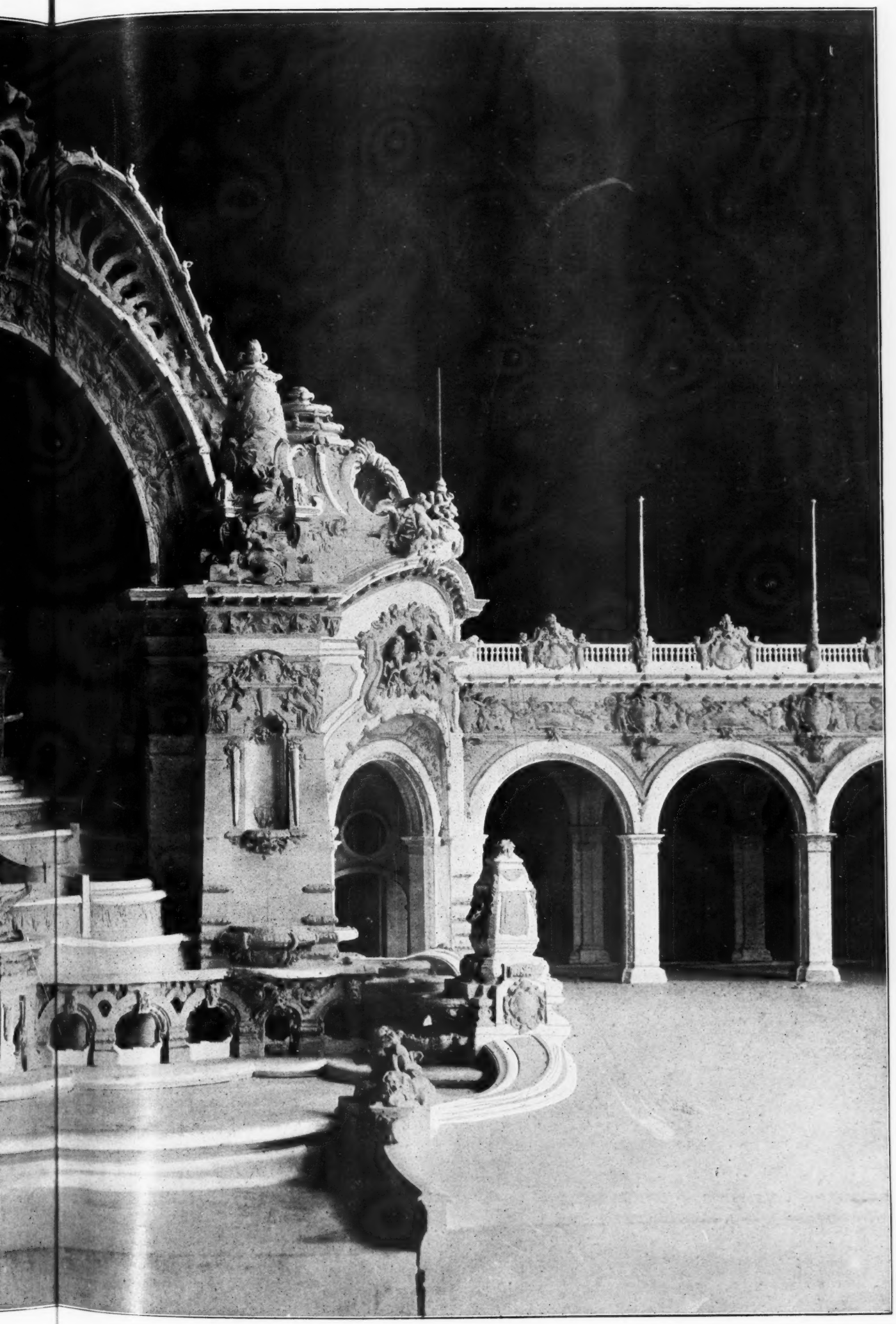

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